Body shape and family environment among students enrolled in courses of the health field: a comparison between Brazil and Spain

Imagem corporal e ambiente familiar em estudantes da saúde: uma comparação entre Brasil e Espanha

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Abstract

Introduction: Body shape is an important component of personal identity, since it is the way the body depicts itself. When this image brings a bad shape to the individual, it becomes a factor triggering eating disorders. Some groups suffer with significant social pressure due to their physical image, since they work in fields related to weight control or to body shape. These groups are prone to present body dissatisfaction and, then, to develop eating disorders. Students enrolled in courses related to the health fields are among these risk groups. *Objective*: Assessing the body shape and its correlation to the family environment of this group in two countries, Brazil and Spain. *Methodology*: Analytical study based on the quantitative approach. Data collection was performed based on an instrument, which was divided into two parts: data identification, and aspects linked to body shape (Body shape Questionnaire) and family environment (Family Environment Scale). *Results*: Dissatisfaction with the body shape reached 43.2% of the Brazilian students and 47.07% of the Spanish ones (p = 0.801), and there was association with different factors in the family environment scale. *Conclusion*: The study evidenced the need of including an evaluation about the reflex of body shape on actions taken to promote health in groups vulnerable to body shape distortions.

Keywords: Body shape. Health Science Students. Professional Practice.

Resumo

Introdução: A imagem corporal é um importante componente da identidade pessoal. É a forma pela qual o corpo se apresenta para si próprio. Quando se apresenta para o indivíduo de forma ruim, torna-se um fator desencadeante para transtornos alimentares. Alguns grupos sofrem grande pressão social sobre sua imagem física, porque sua atuação está relacionada ao controle de peso ou imagem corporal. Estes são propícios a apresentarem insatisfação corporal e, assim, desenvolver transtornos alimentares. Estudantes da área de saúde configuram um dos grupos de risco. *Objetivo:* Avaliar a imagem corporal e sua correlação com o ambiente familiar deste público, considerando dois países, Brasil e Espanha. *Metodologia:* Trata-se de estudo analítico, com abordagem quantitativa. A coleta de dados foi realizada a partir de um instrumento dividido em duas partes: dados de identificação, aspectos ligados à imagem corporal (Questionário de Imagem Corporal) e ambiente familiar (Escala de Ambiente Familiar). *Resultado*: A insatisfação com a imagem corporal atingiu 43,2% dos estudantes brasileiros e 47,0% dos espanhóis (p = 0,801), além da relação com diferentes fatores da escala de ambiente familiar. *Conclusão*: O estudo evidenciou a necessidade de se incluir avaliação de imagem corporal nas ações de promoção da saúde em grupos vulneráveis a distorções de imagem corporal.

Palavras-chave: Imagem corporal. Estudantes de Ciências da saúde. Prática profissional.

Introduction

Body shape is an important component of personal image, since it is the way the body presents itself. It is the image carried in the memory about the size and shape of ones' body, which includes feelings about these features and their constituent parts.[1]

The female sex is more vulnerable to social, economic and cultural pressures associated with aesthetic standards and to concerns with body shape. Overall, society rejects, criticizes and reproves obese people, since the concept of ideal body among women is based on slimness. Overweight bodies are often seen as the result from laziness and lack of discipline and motivation. The pressure to reach the ideal body standard widespread as beauty standard leads to worse dissatisfaction with body shape, to increased rate of disordered eating and to failed weight control attempts[2-4]

Body dissatisfaction features the discrepancy between the real and idealized body shape, and this dissatisfaction is associated with depression, stress, low self-esteem, greater eating restrictions and lack of exercising – fact that highlights the importance of assessing this parameter. Women present higher degree of body dissatisfaction, as well as more eating disorders than men.[3] With respect to men, dancers, models, jockeys, gymnasts, swimmers, bodybuilders, runners and wrestling fighters are the groups presenting higher risk to develop eating disorders.[5,6]

Professionals whose actions are linked to exaggerated concern with weight or with body shape, such as athletes, models, actresses and dieticians, stand out among groups presenting more chances to develop eating disorders (ED). Scholars of scientific fields related to physical looks, such as Physical Education and Nutrition, also deserve attention.[2,7] Accordingly, research have been questioning whether these future professionals, mostly women, can be more susceptible to develop eating disorders since they are often concerned with their body shape, overweight and with eating habits.[5,8,9]

It is known that the multifactorial etiopathogenesis influences de development of EDs, and there is the hypothesis that it also interferes in family dynamics, cultural media and in individual aspects of personality such as factors that lead to the pre-disposition, implementation and maintenance of disorders. The high stress level faced by students in the biological sciences and health fields may result from the high workload, curriculum and extension activities, self-demands, as well as from the fact that they belong to areas related to food, nutrition and to care with body composition. This process likely contributes to higher prevalence of eating disorders in this population. Thus, the population of college students deserves to be evaluated through studies focused on assessing their self-perception about their body shape, and on risk factors for the development of eating disorders in this group[5], including their family environment.

According to the aforementioned, college students enrolled in courses of the health field, mostly the female ones, deserve special attention in the investigation of family environment and body shape, because they are the most vulnerable group, given the course they attend to and their sex. This investigation can help preventing EDs among women, their professional formation and future practices by guiding actions capable of helping these women to have clearer perception about the link among EDs, body shape distortions and the exaggerated concern with physical shape. In order to clarify the factors able to induce this change in self-image, it is worth investigating the family environment of these students.

There are many instruments available to assess body shape. The BSQ - *Body Shape Questionnaire* stands out among them, since it assesses body shape disorders caused by concerns with weight and body shape. The questionnaire was developed for adults and adolescents, and it can be applied to clinical and non-clinical populations. It was validated in Brazil[10] and Spain.[11]

According to Garcia et al.[4], studies show body dissatisfaction increase in the last 50 years, mainly among women. They state that the "body cult" and consumerism are the two factors pointing towards this increasing dissatisfaction, besides highlighting that most women do not meet the ideal of beauty associated with slimness. This process causes a sense of inadequacy and shame, which leads to changes in eating behaviors that feature their risk to develop EDs.

Although beauty standards change with time, the problem lies on their intangibility to most individuals. Often times, the pressure to reach the widespread ideal body worsens the self-perception about ones' body shape, increases the risk to develop eating disorders and the failed attempts to control body weight. Socio-cultural influences can induce the will to have a slim body and the consequent dissatisfaction with the real one when this individual does not reach the cultural ideal. Body self-perception reflects on the great dissatisfaction with self-image that influences some behaviors: use of restrictive diets, overload of physical exercises and the habit to read magazines that encourage restrictive diets and worship slimness as a symbol of beauty and power.[3,8]

There are authors who cite abnormal eating patterns as factors motivating the search for the college majors described above, as well as authors who state that students in their first year in college have more risk to develop DEs.[7] A study conducted by Hughes and Desbrow, and cited by Laus et al.,[7] assessed the reasons motivating the choice for a major in Nutrition. They found that one of the main factors reported by these professionals was their previous personal experience with DEs.

Garcia et al.[4] mention that studies comparing cases of altered eating behaviors among college studies in different courses and Nutrition students showed that dieticians are the ones presenting the largest number of individuals with eating disorders. These data are worrisome, since these students are professionals used to teach patients about weight control and body shape. It is alarming that they have DEs themselves; therefore, according to the literature, these disorders can influence their professional practice. These authors also highlight that the interest in the topic 'diet/eating' and the concern with body shape are characteristics of DEs. When it comes to Nutrition students, it is possible assuming that the study on these topics attracts people with tendency to develop such disorders, or that the pressure for body adequacy to the imposed standards, in addition to the expectation of having a good professional performance, would favor the development of DEs.

The study conducted by Laus et al.,[7] shows statistically significant difference in body weight perception between students enrolled in health and humanity courses – students enrolled in courses related to the health field recorded the highest scores in this variable. Moreover, the analysis encompassing the four assessed courses (two in the health field and two in the humanities field) evidenced that Nutrition students are the ones presenting the highest scores based on this instrument, their values were statistically different from the ones recorded for Marketing and Business students, but similar to those observed for Physical Education students ($p < 0.05$).

Gonçalves et al.[2] observed that 14.1% of Nutrition students present symptoms of anorexia nervosa (p<0.05) when they assessed body perception - they detected that 75.8% of them were unhappy with their body shape (p<0.05). According to the body shape test, most Nutrition students felt overweight, although most of them were eutrophic.

Thus, it was easy observing that the herein addressed subject remains little explored, but it emerges as a mandatory investigation, to the extent that better understanding it means the possibility of mitigating the risks for the health of these individuals due to distorted body image or to risks associated with their professional practices, which can somehow influence disorders in the population assisted by them.

Methodology

The sample encompassed students enrolled in health sciences courses of State University of Ceará (UECE) in Fortaleza – CE, Brazil, and of the Catholic University of San Antonio de Murcia (UCAM) in Murcia, Spain.

The following courses of the Health Sciences Center were included in the study: Biological Sciences, Physical Education, Nursing, Physiotherapy, Medicine, Nutrition, Psychology and Occupational Therapy. Data were collected in 2012. The adopted inclusion criteria are based on the review presented in the previous chapter, namely: students enrolled in courses of the health field in one of the assessed universities and to be a young adult,[12] mainly in the extremes 18 and 30 years, and to agree in participating of the study by signing the Free and Informed Consent Term (FICT). The project was approved under number 10724749-6.

The exclusion criteria were: diagnosed DE, pregnancy and to be enrolled in the two last semesters of the course. These criteria were based on the fact that these students are already attending their internship and, so, they do not stay in the campus. Their absence would make data collection infeasible.

Students were approached in the classrooms and were asked to sign the FICT. Besides their names and signatures, students had to inform their e-mails, so that they could receive the questionnaire. There was no quantitative limit for adhesion to the study, all students interested in participating were added to the sample. The questionnaire was formulated in Google® Docs and composed of identification data, body shape and family environment scale.

The following variables were included in the identification data: age, year joining the course and marital status. The Portuguese version of the *Body Shape Questionnaire* (BSQ) was adopted to investigate body shape. It was validated in Brazil, in a similar population - a group of college students.[10] The version used in Spain was the one validated by Warren et al.,[11] who validated it by

using the American and Spanish populations with, and without, eating disorder diagnosis. The validated versions of the two countries present the same classification cutting points.

The questionnaire comprised 34 questions that had to be answered by the interviewees themselves, according to a legend; the options varied from "never" (1) to "always" (6). The scores varied from 0 to 24 and the intensity categories varied from "satisfaction with the body shape" (0 to 8 points), "low dissatisfaction with the body shape" (81 to 110 points), "moderate dissatisfaction with the body shape" (111 to 140 points) and "severe dissatisfaction with the body shape" (141 to 204 points).

Subsequently, the validated and translated (Vianna, Silva & Souza-Formigoni)[13] version of the Family Environment Scale (FES) by Moos & Moos[14] was applied. This scale comprised 90 statements that had to be answered by the interviewee based on the false or real approach. Ten (10) analysis domains were established: Cohesion (items 1, 11, 21, 31, 41, 51, 61, 71 and 81); Expressiveness (items 2,12, 22, 32, 42, 52, 62, 72 and 82); Conflict (items 3, 13, 23, 33, 43, 53, 63, 73 and 83); Independence (items 4, 14, 24, 34, 44, 54, 64, 74 and 84); Accuracy (items 5, 15, 25, 35, 45, 55, 65, 75 and 85); Intellectual interests (items 6,16, 26, 36, 46, 56, 66, 76 and 86); Leisure (items 7, 17, 27, 37, 47, 57, 67, 77 and 87); Religion (items 8, 18, 28, 38, 48, 58, 68, 78 and 88); Organization (Items 9, 19, 29, 39, 49, 59, 69, 79 and 89) and Control (items 10, 20, 30, 40, 50, 60, 70, 80 and 90). There was no cutting point; results were compared based on the presence of larger or smaller number of points.

FES can be divided into three dimensions to evaluate its results: a) Interpersonal relationships, which encompass 27 questions distributed into three domains – 1. Cohesion; 2. Expressiveness; 3. Conflict -; b) Personal growth, which comprises 45 questions distributed into five domains – 1. Adhesion capacity; 2. Accuracy; 3. Intellectual interests; 4. Leisure; 5. Religion -; and c) System Maintenance, which comprises 18 questions distributed into two domains - 1. Organization and 2. Control.

This instrument was selected due to its current use, easy comprehension and application, and to its ability to evaluate families based on different aspects, and to its applicability in families presenting the disease or not. It is used in Spain and in other European countries; recent studies in Spain, and in other countries that speak Spanish, have Moos & Moos[14] as reference.

Google® Docs generated an automatic tabulation in Excel® for Windows – this procedure was adopted to keep total secrecy about participants' data. Two tables were generated, one with data about Brazilian students and another one with data about Spanish students. These tables were later gathered in a single one. The final tabulation resulted in 392 valid questionnaires, which were properly and fully filled. The Brazilian sample counted on 243 students and the Spanish sample had 149 participants.

Data tabulated in Google® Docs were initially explored to compose the table with written texts in Excel®, version 2007, Microsoft. This table showed typing mistakes and possible data inconsistencies. After the mistakes were corrected, the Excel® table was exported to the Statistical Package for the Social Sciences software (SPSS®), version 17.0, IBM for statistical analysis.

The Kolmogorov-Smirnov test was performed to diagnose any abnormality in data distribution. Test results showed the need of using non-parametric statistics in the following analysis.

Data descriptive analysis involved the calculation of absolute and relative frequencies of the categorical variables. Medians and percentiles 25 and 75 were calculated when variables were continuous.

The bivariate analysis was conducted based on the type of the involved variables. The Mann-Whitney test was applied to investigate differences in medians of anthropometric variables (continuous) in comparison to the classification recorded in BSQ (dichotomous variable that points towards satisfaction or dissatisfaction) and FES. The Spearman correlation coefficient was also used to test the likelihood of correlation between BSQ and FES scores and the values of anthropometric measures.

Besides the descriptive analyses, the Pearson chi-square test was adopted when two variables were categorical. Differences were considered statistically significant when p-value in the test was lower than 0.05, in all tests.

Results

The study counted on the participation of 392 students, 243 were Brazilian (62.0%) and 149 were Spanish (38.0%). All students were enrolled in courses related to the health field and most of them (40.6%) were enrolled in the Nursing course (Table 1). The researcher responsible for the study in Fortaleza is a dietician and the one in Murcia is a Nurse, fact that may have influenced the great adhesion of students enrolled in these courses in both cities.

Most students in the sample were women (78.8%) and single (92.1%), regardless of the location (Fortaleza, 80.7% women and 95.5% single; Murcia, 75.8% women and 86.6% single).

Table 2 depicts the distribution of students based on the year starting in college. It showed larger concentration of freshman in Murcia and more homogeneous distribution in Fortaleza - slight majority of students attending the Senior year.

Table 1. Distribution of students based on location and college major. Fortaleza, 2014.

City	Fortaleza-BR		Mucia-BR		Total	
Major	n	%	n	%	n	%
Biological Sciences	44	18.1	0	0	44	11.2
Physical Education	57	23.5	7	4.7	64	16.3
Nursing	41	16.9	118	79.2	159	40.6
Physiotherapy	0	0	7	4.7	7	1.8
Medicine	21	8.6	0	0	21	5.4
Nutrition	80	32.9	14	9.4	94	24.0
Psychology	0	0	2	1.3	2	0.5
Occupational Therapy	0	0	1	0.7	1	0.3
Total	243	100.0	149	100.0	392	100.0

Table 2. Distribution of students based on location and college grade in Fortaleza, 2014.

City	Fortaleza-BR		Mucia-BR		Total	
Year	n	%	n	%	n	%
1st.	44	18.1	97	65.1	141	36.0
2nd.	56	23.0	17	11.4	73	18.6
3rd.	42	17.3	13	8.7	55	14.0
4th.	73	30.0	20	13.4	93	23.7
Others	28	11.5	2	1.3	30	7.7
Total	243	100.0	149	100.0	392	100.0

With regard to the body shape questionnaire, there was no statistical difference in the comparison between scores reached by the two populations ($p = 0.801$). Median values were 76 and 78 points, respectively, for Fortaleza-BR and Murcia-SP.

BSQ results are presented in Table 3; the frequency number pointed towards the high prevalence of dissatisfaction with body shape in both cities.

Table 3. *Body Shape Questionnaire* (BSQ)[1] results recorded for the assessed students based on location. Fortaleza, 2014.

BSQ	Fortaleza-BR		Murcia-ES		Total	
	n	%	n	%	n	%
Body satisfaction	138	56.8	79	53.0	217	55.4
Body dissatisfaction	105	43.2	70	47.0	175	44.6
Total	243	100.0	149	100.0	392	100.0

[1] According to Di Pietro, Silveira (2009) – Brazil and Warren et al. (2008) - Spain.

Results of the Family Environment Scale are shown in Table 4. There was difference between the two populations in most of the assessed domains. Higher scores were observed among Brazilian students in domains 'Religion' and 'Control'. Scores were higher among Spanish students whenever there were differences among other domains. When the three dimensions were taken into account – Interpersonal Relationships, Personal Growth and System Maintenance -, it was possible observing difference only in domain Interpersonal Relationships, which recorded higher scores among Murcia students.

Table 5 presents the results of correlations between FES and BQS. FES variables that presented correlation to BSQ among Fortaleza students were: Independence, Accuracy and Religion. Variables Expressiveness and Conflict were correlated among Murcia students. Variables that presented significance in the total sample were Conflict, Independence and Accuracy. Such discrepancies can happen due to cultural differences between countries. Some of the variations observed among families of the Brazilian population were found in the Brazilian FES validation and they will be well-approached in the discussion section.

Table 4. Family Environment Scale (FES)[1] results recorded for assessed students based on domain, dimension and location. Fortaleza, 2014.

Domain FES[1]	Fortaleza-BR			Murcia-ES			p value
	P 25	Median	P 75	P 25	Median	P 75	
Cohesion	5	7	8	6	8	9	0.001
Expressiveness	4	5	7	5	6	7	0.001
Conflict	1	2	4	2	3	4	0.001
Independence	5	6	7	5	6	7	0.155
Accuracy	5	6	7	5	6	7	0.225
Intellectual Interests	3	5	6	4	6	8	0.001
Leisure	3	4	6	4	5	7	0.001
Religion	5	7	8	3	4	5	0.001
Organization	4	6	7	6	7	8	0.001
Control	4	5	7	3	4	6	0.001
Dimension FES[1]							
Relationship Interpersonal	4.0	4.7	5.3	4.7	5.7	6.2	0.001
Personal growth	4.8	5.4	6.0	4.6	5.4	6.2	0.795
System Maintenance	4.0	5.5	7.0	4.5	5.5	6.5	0.769

[1]According to Vianna, Silva and Souza-Formigoni (2007) - Brazil and Moos, Moos (1994) - Spain.

Table 5. Comparison of median recorded for data on dimension 'family environment scale' (FES)[1] of the assessed students based on Body Shape Questionnaire (BSQ)[2,3] results and location. Fortaleza, 2014.

Variable FES	BSQ	Fortaleza-BR				Murcia-ES				Total			
		P25	Median	P75	p-value	P25	Median	P75	p-value	P25	Median	P75	p-value
Domain													
Cohesion	1	5	7	8	0.944	4	8	9	0.056	5	7	9	0.237
	2	5	7	8		7	8	9		5	8	9	
Expressiveness	1	4	5	7	0.653	3	6	7	0.016	4	6	7	0.266
	2	4	5	7		5	7	7		4	6	7	
Conflict	1	1	2	4	0.238	2	3	5	0.024	2	3	4	0.022
	2	1	2	3		2	3	3		1	2	3	
Independence	1	5	6	7	0.001	4	6	7	0.781	5	6	7	0.008
	2	5	6	7		5	6	7		5	6	7	
Accuracy	1	5	6	7	0.004	5	6	7	0.656	5	6	7	0.011
	2	4	5	4		4	6	7		4	6	7	
Intellectual Interests	1	3	5	6	0.584	3	6	7	0.179	3	5	7	0.603
	2	3	4,5	3		4	6	8		3	5	7	
Leisure	1	3	5	7	0.313	3,75	5	7	0.086	3	5	7	0.970
	2	3	4	6		4	6	7		3	5	6,5	

Variable FES	BSQ	Fortaleza-BR				Murcia-ES				Total			
		P25	Median	P75	p-value	P25	Median	P75	p-value	P25	Median	P75	p-value
Religion	1	5	7	8	0.031	3	4	5.25	0.530	4	6	8	0.185
	2	5	6	8		3	4	5		4	5	7	
Organization	1	4	6	7	0.893	5	7	8	0.261	5	6	8	0.492
	2	4	6	7		6	7	8		4	7	8	
Control	1	4	6	7	0.225	3	4.5	5	0.519	4	5	6	0.237
	2	4	5	7		3	4	5.25		3	5	6	
Dimension													
Interpersonal relationship	1	4.3	5.0	5.3	0.273	4	5.5	6	0.068	4.3	5.0	5.7	0.644
	2	3.7	4.7	5.3		5.3	5.67	6.3		4.0	5.0	5.7	
Personal Growth	1	4.8	5.6	6.1	0.100	4.4	5.2	6.2	0.347	4.6	5.4	6.2	0.564
	2	4.8	5.4	6.0		4.6	5.6	6.2		4.8	5.4	6.1	
System Maintenance	1	4.0	5.5	7.0	0.450	4	5.5	6.5	0.790	4.0	5.5	6.5	0.668
	2	4.0	5.5	7.0		4.5	5.5	6.5		4.5	5.5	6.5	

[1]According to Vianna, Silva and Souza-Formigoni (2007) - Brazil and Moos, Moos (1994) - Spain; [2]according to Di Pietro, Silveira (2009) - Brazil and Warren et al. (2008) – Spain; [3]Categories: 1 = Body dissatisfaction and 2 = Body satisfaction.

Discussion

There were similarities between the assessed groups. The sample was selected according to the inclusion criteria: being enrolled in a course linked to the health field, as well as being a young adult. However, similar features among the two groups regarded the prevalence of single female participants; the median of ages corroborated the homogeneity of the sample and the accuracy of the comparative analysis applied to the main data of interest: body shape and family environment.

Bosi et al.[15] conducted a study with Physical Education students and recorded mean BSQ score 81 (SD – 33.5). The study by Garcia, Castro & Soares,[4] presented mean BSQ score 80.33 $\pm$ 27.7, and dissatisfaction in 39.42% of the sample composed of Nutrition students.

Thus, the rate of dissatisfaction with body shape observed through BSQ in the present study was lower than that observed in other national researches. On the other hand, students enrolled in other courses of the health field and Physical Education and Nutrition students were included in the current study. These students can hypothetically suffer less pressure than the ones in the two courses mentioned above. There were no publications of studies involving similar populations capable of allowing comparisons to the Spanish students.

The Murcia sample presented significantly higher scores in most FES domains (Cohesion, Expressiveness, Conflict, Intellectual Interests, Leisure and Organization) in comparison to FES results and to their results in the two countries, as well as to the Interpersonal Relationships dimension (Cohesion, Expressiveness and Conflict). These variations may have happened due to cultural differences between the two countries.

Cohesion is related to more help and support between family members and to expressiveness and affection. These two dimensions presented the highest scores and were correlated to most positive aspects of family[13], besides recording the highest scores between Spanish students.

The domain Conflict reflects the degree of aggressiveness and the conflict openly expressed between family members, besides recording the highest scores among Murcia students. The lowest score in Brazil in this domain was reported in a study conducted to validate the scale in the country (FES), whose authors highlighted that this process can happen due to Brazilian cultural characteristics. The North-American culture – the scale was developed in the U.S.A. – encourages competition and the fight for individual rights; whereas, in Brazil, until the mid XX century, the social organization was strongly influenced by a hierarchical structure centered on the authoritarian paternal figure. Such feature could characterize a relatively-repressor social environment that could restrain the expression of aggressive behaviors and avoid conflicts.[13]

The significant differences in domains Cohesion, Expressiveness and Conflict in the Murcia sample reflect the difference observed in the Interpersonal relationships in comparison to the Fortaleza sample. This factor points out that Spanish students' families present better relationship among family members and more conflict than the Brazilian group.

The highest score between Spanish students in domains Intellectual Interests, Leisure and Organization must result from peculiar cultural features in both countries. However, studies correlating FES in Brazil were not found in the literature, and it made further comparisons not feasible.

The highest score recorded for domain Religion in the families of Fortaleza students was already reported in the Brazilian validation study, and this score may be explained by the great religiosity in the country. The highest score in domain Control is related to negative aspects for families regarding their daily issues.[13] Although there are only few studies conducted in Brazil based on FES – outside the context of children presenting psychiatric issues -, the present results comply with the aforementioned traditional hierarchical profile of the Brazilian family.

The meta-analysis conducted by Marcos et al.[16] about the influence of family on eating disorders showed that 83.33% of the analyzed studies observed that the encouragement of dietary control interferes in disorders. They reported that this influence presents itself in three different ways: the influence of family on dietary control behavior, which generated dissatisfaction with the body in eight of the 20 students. This process resulted in bulimic symptoms in six of the 20 studies. The behavior of restricting the diet and the dissatisfaction with body shape were observed in 15 studies of the total.

The comparison between BSQ results and FES data makes it worth highlighting that the present study is pioneer in making this comparison, since such association has not been investigated before. Therefore, some considerations about the literature available were made in order to better illustrate the potential frame drawing health losses, although the studies involved individuals in other age groups.

Categories Expressiveness and Conflict presented significant association with BSQ in Murcia samples, respectively. They were correlated to satisfaction and dissatisfaction with body shape. As already mentioned, there are cultural differences between the two countries.

According to Adrian et al.,[17] the domain Conflict was related to non-suicidal self-injuries in adolescent patients of a psychiatric hospital. They cited the importance of family for interpersonal issues and emotional deregulation. Individuals raised under strict rules and in conflicting families have a series of competence and emotional deficits[17] since parents are the first socializing agents modulating their emotional trajectory.

Domains Independence and Accuracy were correlated to dissatisfaction with body shape, but only in the Fortaleza sample (with repercussion on global data). However, the validation study reports that these two domains presented lower internal consistency in the validation for the Brazilian population.[13]

Domain Religion recorded higher scores in the Fortaleza group and was correlated to dissatisfaction with body shape in this sample. This outcome may have resulted from direct association, so, it can be a confusion factor, because the score of the domain was high in this group, regardless of the BSQ result.

The study by Cance et al.[18] encompassed 848 students from Texas (U.S.A.); it used FES in adolescents and mothers and found that positive family relationships were inversely correlated to disordered eating habits. Family conflict and mother psychological control generated eating disorders. Domains Conflict and Control were related to family issues in the Brazilian validation study.[13] However, such domains were not associated with the Fortaleza sample in the current study.

The study by Hanna & Bond[19] counted on 315 women in the age group 14-28 years enrolled in high school and in college. They assessed family conflicts and negative messages about weight rates passed from mother to daughters. The authors found out that the frequency of negative messages contributes more to the symptomatology of disorders than family conflicts.

Hedlund et al.[20] conducted a longitudinal study (6 years) with bulimic patients and found that parental overprotection, which is featured as control without affection, is a risk factor for psychopathologies. Accordingly, the group that has presented the highest risk also presented the lowest score in Expressivity and Independence, as well as the highest score in Accuracy.

Wang et al.,[21] observed that the simple fact of seating at the table to eat with their families represented lower chances for youngsters to present disordered behaviors concerning weight control. Moreover, youngsters who had their parents along during their physical activities were more protected from such behaviors. This association did not differ between different races, ethnicities or between individuals recording different body weight.

Cromley et al.[22] concluded that many variables featuring parents and families are associated with weight control behaviors, eating excess episodes and body dissatisfaction. The investigation conducted by these authors with adolescents showed that individuals presenting lower body satisfaction and more severe, or less healthy, ways to control weight have experienced stricter weight control from their parents. The presence of eating excesses between well-educated adolescents was associated with lower cohesion and family adaptability. Adolescents who presented lower body satisfaction also had parents focused on weight control practices; whereas the ones who gave more importance to slimness were the ones who had low self-esteem parents.

Kluck[23] highlights the importance of family environment in decreasing eating disorders rates and body dissatisfaction among women. He conducted a study with 268 female college students and observed that families more focused on external looks had more dissatisfied daughters and more bulimia symptomatology.

Neumark-Sztainer et al.[24] showed that bullying about weight from parents and relatives associated higher BMI, body dissatisfaction, extreme-weight control behavior and binge eating with control-loss by girls. Thus, one can notice that groups vulnerable to dissatisfaction with body shape and the development of eating disorders deserve a routine approach to be performed at school through the application of BSQ and FES. Such procedure would allow the early detection of undesirable conditions and help the referral to adequate healthcare assistance.

The present study introduces a new way to evaluate the family environment, which is herein understood as a determining factor for body shape satisfaction, besides acknowledging the importance of cultural differences. The fact that it is consortium between universities in two different countries allows comparing different realities, as well as experience exchange. The cross-sectional design limits more accurate conclusions, but it is possible noticing the connection between family environment of an individual and his/her body satisfaction.

This research design opens room for the evaluation of a new way to early diagnose eating disorders and other psychiatric diseases related to weight and self-perception about body shape among college students. Educational interventions can be developed and applied to college students. These actions must have an educational and preventive profile; moreover, instruments BSQ and FES can be valuable tools to detect such disorders.

Conclusions

There were family environment differences between both groups. Families of Spanish students were more cohesive, affectionate, conflictive, had more interest in intellectuality and spent more time in leisure activities together. They were more organized and had closer interpersonal relationship among family members. Families of Brazilian students were more religious and showed more parental control.

Dissatisfaction with body shape was measured by applying the *Body Shape Questionnaire* (BSQ), which recorded 43.2% for Brazilian students and 47.0% for the Spanish ones; there was no differences between the two groups.

There was correlation between body shape and family environment, although it was different within each group of students. Brazilian students satisfied with their body shape belong to families that allow more independence for their members, whereas students dissatisfied with their body

shape belonged to more assertive (focused on reaching targets) and religious families. Spanish students satisfied with their body shape belong to more affectionate families, whereas the dissatisfied ones belonged to conflicting families.

Groups were similar to each other in variables age, anthropometry, satisfaction with anthropometric data and with self-image in *Body Shape Questionnaire* (BSQ); however, magnitudes were different. The addition of variable Family Environment Scale (FES) allowed seeing differences between data concerning satisfaction with anthropometric condition and with body shape, fact that evidences possible differences in the cultural scope.

The study evidenced the need of including body shape and family environment evaluation in actions to promote health in groups vulnerable to body shape distortions.

Contributors

Sampaio HAC helped with the study design and with the writing of the final version of the manuscript. Parente NA participated in all stages of the study, since its design until the review of its final version. Pinto Júnior EP participated in data analysis and interpretation, as well as in the final review of the article. Jiménez-Rodríguez D participated in the study design, in data collection and in the final review of the manuscript.

References

1. Slade, PD. What is body image? Behav Resear Ther. v.32, n.5, p.497-502, 1994.

2. Gonçalves, T. D.; Barbosa, M. P.; Rosa, L. C. L.; Rodrigues, A. M. Comportamento anoréxico e percepção corporal em universitários. Jornal Brasileiro de Psiquiatria, v.57, n.3, 2008.

3. Alvarenga, M. S.; Philippi, S. T.; Lourenço, B. H.; Sato, P. M.; Scagliusi, F. B. Insatisfação com a imagem corporal em universitárias Brasileiras. Jornal Brasileiro de Psiquiatria, v.59, n.1, p.44-51, 2010 a.

4. Garcia, C. A.; Castro, T. G.; Soares, R. M.. Comportamento alimentar e imagem corporal entre estudantes de nutrição de uma universidade pública de porto alegre – RS. Rev HCPA, v.30, n.3, 2010.

5. Pires, R.; Pinto, J.; Santos, G.; Santos, S.; Zraik, H.; Torres, L.; Ramos, M.. Rastreamento da frequência de comportamentos sugestivos de transtornos alimentares na Universidade Positivo. Revista de Medicina, São Paulo, v.89, n.2, p.115-123, abr./jun., 2010.

6. Alvarenga, M. S.; Scagliusi, F. B.; Philippi, S. T. Nutrição e transtornos alimentares: Avaliação e tratamento. São Paulo: Manole, 2010 B.

7. Laus, M.F.; Moreira, R.C.M.; Costa,T. M.B.. Diferenças na percepção da imagem corporal, no comportamento alimentar e no estado nutricional de universitárias das áreas de saúde e humanas. Revista de Psiquiatria, Rio Grande do Sul, v.31, n.3, p.192-196, 2009.

8. Penz, L. R.; Bosco, S. M. D.; Vieira, J. M.. Risco para desenvolvimento de transtornos alimentares em estudantes de Nutrição. Scientia Medica, Porto Alegre, v. 18, n. 3, p. 124-128, jul./set. 2008.

9. Kirsten, V.R.; Fratton, F.; Porta, N.B.D.. Transtornos alimentares em alunas de nutrição do Rio Grande do Sul. Revista de Nutrição, Campinas, v.22, n.2, p. 219-227, mar./abr., 2009.

10. Di Pietro, M.; Silveira, D. X.. Internal validity, dimensionality and performance of the Body Shape Questionnaire in a group of Brazilian college students. Revista Brasileira de Psiquiatria, v.31, n.1, p. 21-24, 2009.

11. Warren, C.,S.; Cepeda-benito, A.; Gleaves, D.H.; Moreno, S.; Rodriguez, S.; Fernandez, M.C.; Fingeret, M. C.; Pearson, C.A.. English and Spanish versions of the Body Shape Questionnaire: Measurement equivalence across ethnicity and clinical status. International Journal of Eating Disorders, v.41, n.3, p. 265–272, 2008.

12. Lobato, C.R.P.S. O significado do trabalho para o adulto jovem no mundo do provisório. Revista de Psicologia da UNC, v. 1, n. 2, p. 44-53, 2004.

13. Vianna, V. P. T.; Silva, E. A.; Souza-Formigoni, M. L. O. Versão em português da Family Environment Scale: aplicação e validação. Revista de Saúde Pública, São Paulo, v. 41, n. 3, p. 419-26, 2007.

14. Moos, R.H.; Moos, B.S. Family Environment Scale manual. 3nd ed. Palo Alto (CA): Consulting Psychologists Press, 1994.

15. Bosi, M.L.M.; Luiz, R.R.; Uchimura, K.Y.; Oliveira, F.P. Comportamento alimentar e imagem corporal entre estudantes de educação física. J Bras Psiquiatr. V.57, N.1, P.28-33, 2008.

16. Marcos, Y.Q.; Sebastián, M.J.Q.; Aubalat, L.P.; Ausina, J.B.; Treasure, J. Peer and family influence in eating disorders: A meta-analysis. European Psychiatry, v.28, p.199–206, 2013.

17. Adrian, M.; Zeman, J.; Erdley, C.; Lisa, L.; SIM, L. Emotional dysregulation and interpersonal difficulties as risk factors for nonsuicidal self-injury in adolescent girls. Journal of Abnormal Child Psychology, v.39, n.3, p.389-400, 2010.

18. Cance, J.D.; Loukas, A.; Talley, A.E. The differential associations of internalizing symptoms and family and school relationships with disordered eating attitudes among early adolescents. Journal of Social and Personal Relationships. 2014.

19. Hanna, A.C. and Bond, M. J. Relationships between family conflict, perceived maternal verbal messages, and daughters' disturbed eating symptomatology. Appetite, v.47, n.2, p.205-211, 2006.

20. Hedlund, S.; Fichter, M.M.; Quadflieg, N.; Brandl, C. Expressed emotion, family environment, and parental bonding in bulimia nervosa: A 6-year investigation. Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, v.8, n.1, p.26-35, 2003.

21. Wang, M.L.; Peterson, K. E.; Richmond, T.K.; Spadano-Gasbarro, J.; Greaney, M.L.; Mezgebu, S.; Mccormick, M.; Austin, B. Family physical activity and meal practices associated with disordered weight control behaviors in a multiethnic sample of middle-school youth. Academic pediatrics, v.13, n.4, p.379-385, 2013.

22. Cromley, T.; Neumark-Sztainer, D.; Story, M.; Boutelle, K.N. Parent and family associations with weight-related behaviors and cognitions among overweight adolescents. Journal of Adolescent Health, v.47, n.3, p.263-269, 2010.

23. Kluck, A.S. Family influence on disordered eating: The role of body image dissatisfaction. Body image, v.7, n.1, p.8-14, 2010.

24. Neumark-Sztainer, D.; Bauer, K.W.; Friend, S.; Hannan, P.J.; Story, M.; Berge, J.M. Family Weight Talk and Dieting: How Much Do They Matter for Body Dissatisfaction and Disordered Eating Behaviors in Adolescent Girls? Journal of Adolescent Health, v.47, p.270–276, 2010.