



Body Perception and Anorexic Behavior in Medical School Students: A Cross-Sectional Observational Study

Ana Luísa Arantes Pagano¹, Gabriela Bueno Araújo¹, Gabriela Spolon Freitas¹, Rafaela Garcia Lopes¹, Raquel Gouveia Azevedo¹, Roberta Dermínio Borges¹, Ana Valéria Garcia Ramirez^{2,5}, Idiberto José Zotarelli Filho^{2,3,4,*}, Durval Ribas Filho^{1,2}

¹ FAMECA, Faculty of Medicine of Catanduva - Padre Albino University Center, Catanduva/SP, Brazil.

² Associação Brasileira de Nutrologia (ABRAN)/Brazilian Association of Nutrology, Catanduva/SP, Brazil.

³ FACERES – Faculty of medicine of São José do Rio Preto/SP, Brazil.

⁴ Zotarelli-Filho Scientific Work, São José do Rio Preto/SP, Brazil.

⁵ Ana Valeria Ramirez Clínica- Clinic of Nutrition and Health Science, São José do Rio Preto SP, Brazil.

*Corresponding author Email: dr.idibertzotarelli@faceres.com.br

DOI: <https://doi.org/10.34256/mdnt21112>

Received: 16-01-2021; Accepted: 23-1-2021; Published: 25-1-2021

Abstract: Introduction: The concept of body image is defined as the subjective image about the forms and characteristics of the body itself, which integrates physical, mental, and emotional levels about this perception. Excessive concern with weight and body shape and the divinization of exaggerated thinness can lead to eating disorders, which are characterized as psychiatric diseases defined by changes in eating behavior, which mainly affects women, being a source of physical and psychological damage. One of the most common disorders is anorexia nervosa (AN). **Objective:** To analyze the body perception and anorexic behavior of students at a medical school in the interior of São Paulo. **Methods:** This is an observational, qualitative study to assess the body perception and anorexic behavior of university students at a medical school in the city of Catanduva-SP. The sample consisted of 141 students. To assess the perception of body image, the Kakeshita silhouette scale, and a visual analog scale were used. For the evaluation of the subjective component of the body image, a virtual questionnaire was applied by Google Forms on the evaluated components. The assessment of nutritional status considered the classification of the body mass index and the EAT-26 test. For statistical analysis, the Wilcoxon non-parametric test was used. **Results:** The students had an average age of 21.34 years \pm 2.2 and an average height of 1.64 meters. The average of the real Body Mass Index (BMI) was 22.08 Kg/m², the perception of BMI was 26.40 Kg/m² and the desired BMI was 22.93 Kg/m², the last two being different statistically from the first. As for EAT-26, 73 students obtained a score greater than or equal to 21, which is considered a risky behavior for the development of AN. **Conclusion:** Most students have an altered perception of their body image since the perception of BMI is higher than the real BMI. In addition, it was noted, from the positive EAT-26, the existence of a high-risk behavior index for anorexia nervosa in the women in the sample. Thus, it is necessary to investigate the causes of the divergence between reality and looking at oneself in order to prevent such changes from becoming eating disorders.

Keywords: Body perception, Anorexia, Obesity, Anxiety.

1. Introduction

The concept of body image is defined as the subjective image about the forms and characteristics of the body itself, which integrates physical, mental, and emotional levels about this perception. The author and neurologist Paul Schilder in his work "The Image of the Body" makes this definition by approaching that "... the human body image is understood as the figuration of our bodies formed in our mind, that is, the way in which the body presents itself to us "[1] and, further affirms that everyone has a three-dimensional image of himself, that is, it is not just

about sensation or imagination, the existential context, the individual's personality, the libidinal energy must be considered associated with body development and body language [1]. For the author, social relationships are closely linked to emotions and feelings in the dynamics of the body perception process, extending the process from a singular factor to a multidimensional phenomenon that is built by intra and interpersonal relationships parallel to external stimuli that result in experiences and sensations of the body itself in relation to the cultural and environmental context [2].



With the insertion of mass media resources in daily life, in recent years, there were influences to create an ideal standard of beauty through the privilege given the exposure of images of thin bodies, causing great impact on body satisfaction with the persistent search for an idealized physical appearance [3]. Thus, society started to contemplate an attractive model for women, in which overweight became something related to sadness and frustration, while thinness and “good shape” promise happiness and self-satisfaction. Paradoxically, the pressure to reach the body proposed as perfect rooted in Western culture is accompanied by an increase in cases of eating disorders such as anorexia and bulimia [3], in addition to the psychological suffering resulting from social stigmas that discriminate against the body that does not fit in the measures extolled by the media [4].

Excessive and excessive concern with weight and body shape and the divinization of exaggerated thinness can lead to eating disorders, which are characterized as psychiatric diseases defined by changes in eating behavior, which mainly affects women, being a source of physical and psychological damage. Such disorders are considered a public health problem, due to a large number of cases [5]. It is known that the walk to reach the “perfect body” is, as a rule, related to low self-esteem and this is directly linked to social experiences.

One of the most common disorders is anorexia nervosa (AN), defined by the unbridled search for the thin body with intense and purposeful weight loss through totally restrictive diets, associated with the distortion of body image. In these cases, there is a refusal to maintain the normal minimum weight accompanied by traces of obsessiveness, perfectionism, insecurity, excessive fear of increasing weight and bulimic episodes become frequent [6]. In addition, morphofunctional clinical symptoms such as malnutrition, exhaustion, amenorrhea, constipation, reduced skin elasticity, and abdominal retraction are also analyzed, such symptoms are related to morbidity and mortality [5,6].

The conditions for the development of eating disorders include genetic and socio-cultural factors, personality, and low-calorie diets that culminate in biological and mental changes, justifying the multidimensional etiology [6,7]. This research aims to analyze the behavioral profile in relation to the body perception of students of the Faculty of Medicine of Catanduva, therefore, one must consider the various stressors that perpetuate throughout the

undergraduate course, interfering in the psychosocial well-being of the academic and that, they can be the cause of the development of eating disorders when added to the social obsession for thinness, among them can be cited anxiety, depression and fatigue [8, 9].

The high number of hours, excess of bad nights, and the construction of a career that does not admit mistakes are points that have a great potential impact on the quality of life of medical students, being, therefore, quality of life defined as “the perception of individual of his insertion in life, in the context of the culture and value systems in which he lives and in relation to his goals, expectations, standards, and concerns” [3]. This concept involves the entire context in which the individual is inserted based on social determinants and, analyzing the conjuncture of a student in the medical field, a complex process is perceived, in which responsibilities carry daily anxieties and anxieties, which directly imply their physical and mental health, significantly increasing the chance of developing important psychological disorders due to stress, including low self-esteem and body dissatisfaction, which are triggers for the development of eating disorders [10-14].

In view of the exposed theme and the recognition that its analysis is extremely important, the instrument used to measure the signs and symptoms of AN, in a simple and fast way, is the Eating Attitudes Test (EAT) or Food Attitudes Test, which was developed by Garner and Garfinkel. This instrument allows the early diagnosis of disorders, avoiding worsening of the disease when properly treated [15].

The shortened version (EAT-26) addresses 26 items, the shortened version of the original test, which covers 40 items (EAT- 40). The 26 questions from EAT - 26 are divided into three scales obtained by factor analysis, namely: Diet Scale (i), Bulimia Scale and Concern about Food (ii), and Oral Control Scale (iii). The scales addressed refer to factors such as understanding the pathology due to high-calorie foods, excessive concern with physical fitness, compulsive eating followed by episodes of vomiting, and behaviors to prevent weight gain, self-control during meals, and the determinants influencing habits and lifestyle. The test was translated into several foreign languages, being the most well-known and used instrument for identifying eating disorders associated with AN. However, in order to validate the test, the translation must be appropriate, so that the items are consistent with the reality of the sample of individuals



approached, reflecting the local reality, added to an interpretation based on the validity and reliability of the instrument [15].

Therefore, the present study aimed to analyze the body perception and anorexic behavior of students at a medical school in the city of Catanduva-SP, as well as to analyze the students' body perception through the Silhouettes Scale, to identify abnormal eating behaviors and inadequate weight control practices through the Eating Attitudes Test (EAT-26).

2. Methods

This is an observational, qualitative, and quantitative study with the application of a virtual questionnaire by Google Forms to assess the body perception and anorexic behavior of university students at a medical school in the city of Catanduva-SP. The sample consisted of 141 students, whose sample calculation, with a 95% confidence level, indicated the minimum necessary sample of 137 individuals within a population of 307 women from the first to the sixth year of the course.

For the evaluation of body image, the Scale of Figures of Silhouettes was used, according to the procedure applied by Kakeshita, in a study that analyzes the relationships between the nutritional status, the perception of body image, and the eating behavior of the students. The Scale of Silhouettes Figures is a very effective tool to assess the degree of dissatisfaction with weight and body dimensions, as widely accepted and applied by researchers.

The instrument used to assess abnormal eating behaviors and inappropriate weight control practices was the Eating Attitudes Test (EAT-26). The EAT-26 instrument measures, mainly, restrictive eating behaviors, such as diet and fasting, and bulimic behaviors, such as excessive food intake and provoked vomiting.

The version covers 26 items, which are divided into three scales obtained by factor analysis:

- I) Scale of the Diet;
- II) Bulimia Scale and Concern about Food;
- III) Oral Control Scale.

Depending on the type of answer to the 26 test questions, a score is calculated, and people with more than 20 points are classified as having abnormal eating behaviors.

For data analysis, the normality of the sample was analyzed using the Kolmogorov-Smirnov and Shapiro-Wilk tests, as shown in Table 1.

3. Results

The students had a mean age of 21.34 years \pm 2.2. Table 2 shows the classification of the Body Mass Index (BMI), according to the World Health Organization (WHO). Table 3 shows the mean and standard deviation of the sample's weight, height and BMI. When asked about the silhouettes that the students would like to have, it was shown that the average BMI chosen was 22.93 kg / m² \pm 3.16. Table 4 shows the distribution of students according to their Real BMI. Table 5 shows the absolute values of the students' classification regarding the BMI Perception. Table 6 shows the absolute values of the students' classification regarding BMI Desire. Figure 1 shows the distribution, in absolute values, of the BMI classification according to the variables collected.

When evaluating the students' body perception, it was observed that 97 students had a higher BMI perception than reality, representing 68.79% of the sample. About EAT-26, 73 students, representing 51.77% of the sample, obtained an altered result (SCORE \geq 21), which is considered positive, with risk behavior for anorexia nervosa (AN).

Table 1 Normality tests.

	Kolmogrov-Smirnov		Shapiro-Wilk	
	Statistic	Significance	Statistic	Significance
REAL BMI	0.054	0.200	0.987	0.223
PERCEPTION BMI	0.126	0.000*	0.969	0.003*
DESIRED BMI	0.184	0.000*	0.940	0.000*

Due to the non-normality of the sample data of "BMI PERCEPTION" and "DESIRED BMI", it was decided to perform the Wilcoxon nonparametric test, taking into consideration $p < 0.05$.



Of the 97 students who obtained a higher perception of their BMI than reality, 56 also obtained an altered (positive) result in the EAT-26, representing 39.7% of the sample. While 19.1% of the sample had no altered perception and anorexic behavior (Table 7).

Table 2 Classification of the Body Mass Index.

BMI (Kg/m ²)	CLASSIFICATION
Less than 18.5	Under weight
18.5 – 24.9	Normal weight
25.0 – 29.9	Overweight
30.0 – 34.9	Grade I obesity
35.0 – 39.0	Grade II obesity
Greater than or equal to 40.0	Grade III obesity

Table 3 Average values of weight, height and BMI of the students (n = 141).

		Average	Stan-Desv
Weight (kg)		59,38	± 8,16
Height (m)		1,64	± 0,06
BMI (kg/m ²)	Real	22,08	± 2,54
	Perception	26,40*	± 5,98
	Desired	22,93*	± 3,16

* Statistically significant difference with respect to Real BMI (BMI Perception Z = -8.624, p = 0.000; Desired BMI Z = -3.231, p = 0.001).

Table 4 Absolute values of the students' classification regarding the Real BMI.

N	%	BMI CLASSIFICATION
11	7.80	Low weight
113	80.14	Normal weight
16	11.30	Overweight
1	0.76	Grade I obesity

Table 5 Absolute values of the students' classification regarding the BMI Perception.

N	%	BMI CLASSIFICATION
18	12.77	Low weight
31	21.98	Normal weight
38	26.95	Overweight
39	27.66	Grade I obesity
13	9.22	Grade II obesity
2	1.42	Grade III obesity

Table 6 Absolute values of the students' classification regarding the BMI Desire.

N	%	BMI CLASSIFICATION
15	10.60	Low weight
69	48.93	Normal weight
54	38.29	Overweight
3	2.18	Grade I obesity



BMI Distribution

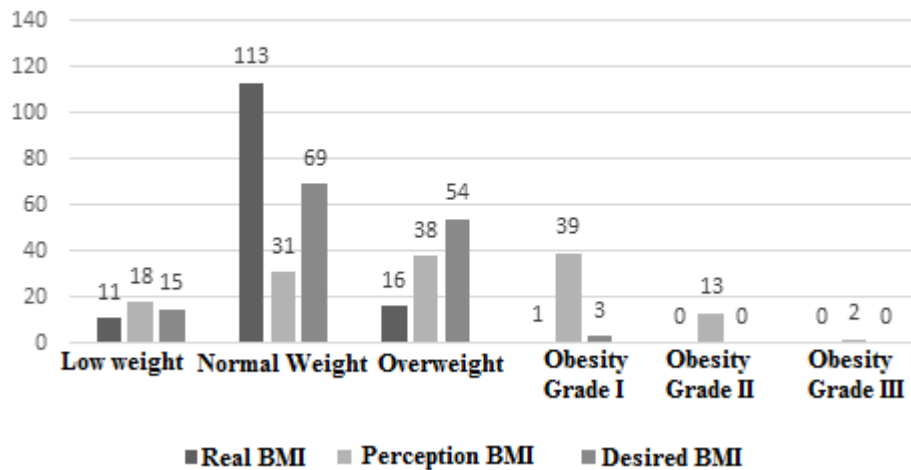


Figure 1 BMI classification according to the variables collected.

Table 7 Comparison between the EAT-26 result and the body perception test.

EAT-26 Positive	Altered Body Perception	
	YES	NO
YES	56	17
NO	41	27

4. Discussion

Given the average age of 21.34 years, it can be inferred that these women, when consuming digital content, suffer great influence from the cultural industry, whether on networks or social media, in terms of beauty and body standardization [16]. Much has been discussed about the roles of networks and the effects that can be generated by the exacerbated use of digital media, especially about body standardization, as the exposure reinforces narcissism and current beauty standards, negatively impacting the perception of body image [17].

The effect of this contact is an altered view of your body image. Of the studied sample, 97 students had such change, representing 68.79% of the total analyzed, according to table 3 which shows that these women, despite having a real BMI significantly lower than the desired one, (real BMI = 22.08 and BMI desired = 22.93, $Z = -3.231$, $p = 0.001$), perceive the body itself in a distorted way, as the metrics do not correspond to perception (perception BMI = 26.40 and real BMI = 22.08, $Z = -8.624$, $p = 0.000$). These data, when compared to the study carried out by Kakeshita I. S. and Almeida S. S. are similar, showing that it is not only a local reality but the university context [18].

Comparing Table 4 dealing with the real BMI with Table 5 on BMI perception, a significant difference is noted, as 80.14% of the students fall into the normal weight category and 12.06% are in the overweight categories. and grade I obesity, while none of them had a real BMI corresponding to grade II and III obesity. However, when analyzing Table 5, there is 65.25% who have the perception of having a BMI corresponding to overweight and obesity grade I, II, and III, and only 21.98% have a perception corresponding to the normal weight category, although at the compared to the actual BMI, most students fall into that category. These data are convergent with the results found in a study carried out with students of the Nutrition and Metabolism course at the Ribeirão Preto Medical School (USP) in which, although 100% of the students are within normal weight, the perceived BMI is classified as overweight [19].

The study by Nunes et al shows that among women who perceived themselves to be fat, only one-third had a BMI compatible with overweight or obesity [20]. The data collected in this research are supported by Nunes' study, since of 65.25% of women who perceive themselves to be overweight or obese (grades I, II, and III), only 12.06% have this value in



the table. Actual BMI. Also, Figure 1 confirms this distribution.

The EAT-26 had a positive result for changes in a significant number of students (51.77%), demonstrating that they can develop AN, therefore, we can establish the relationship between the role of the media in the development of psychiatric diseases and with effects in female food and nutrition. Of the 97 students who had a higher BMI perception than reality, 56 had a positive EAT-26, reinforcing the relationship between changes in the perception of their bodies and risk behavior for eating disorders. A study carried out with university students from all regions of Brazil showed a significantly smaller number of students with positive EAT-26 (26.10%) [21].

Thus, what initially could be just an aesthetic social pressure on women, transcends virtual media and reaches reality as it generates illnesses that cause disease, whether it is the altered perception of the body itself or anorexia nervosa, therefore needing treatment.

5. Conclusion

From the analysis of the collected data, it was concluded that a significant portion of the students of the Faculty of Medicine of Catanduva has altered perception of their body image since the perception of the BMI is higher than the real BMI. In addition, it can be noted, from the positive EAT-26, the existence of a high-risk behavior index for anorexia nervosa in the women of the sample. Thus, it is necessary to investigate the causes of the divergence between reality and looking at oneself in order to prevent such changes from becoming eating disorders representing risks to the health of these university students.

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Acknowledgement

Nil

Funding

Nil

Authors Contribution

Data collection, analysis and preparation of initial draft (ALAP, GBA, GSF, RGL, RGA, RDB, AVGR & DRF); Designing the study, data collection, analysis, preparation and finalizing the manuscript (IJZF). All the authors read and approved the manuscript.

Data sharing statement

No additional data are available

Ethics Approval

Ethics approval was acquired from the Department Ethics Committee

Informed consent

Written Consent were obtained from all the participants

Conflict of interest

The authors declare no conflict of interest.

Manuscript Screened for Originality?

Yes

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