

**BODY IMAGE DISSATISFACTION, ANTHROPOMETRIC AND PSYCHOSOCIAL
CHARACTERISTICS IN HEALTHCARE STUDENTS FROM A
UNIVERSITY IN SOUTH BRAZIL**

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Highlights: (1) High prevalence of body image dissatisfaction among healthcare students. (2) Female medical students, overweight and dissatisfied with their health, show a higher risk. (3) Many normal or underweight students wish to lose weight, indicating vulnerability.

PRE-PROOF

(as accepted)

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ABSTRACT

Objectives: Body image can be described as a mental figure created on the body itself, influenced by the sum of all aspects that surround individuals throughout their lives. This study aimed to determine the prevalence of body image dissatisfaction and its possible link to anthropometric, demographic, and psychosocial characteristics in healthcare students at a university. *Methods:* The study has a cross-sectional design and involved 281 Medical and Dental school students. Body image satisfaction was assessed through the Body Shape Questionnaire (BSQ) and the Stunkard silhouette scale, classifying satisfaction or dissatisfaction. The exposure variables were sex, age, graduation course, self-perceived quality of life, satisfaction with health status, and Body Mass Index. Odds ratios were calculated through multivariate Logistic Regression models. *Results:* According to the instruments used, female medical students dissatisfied with their health status and being overweight present significantly greater chances of having body image dissatisfaction. Although the study population was largely formed by eutrophic or underweight individuals, many have shown to be dissatisfied, expressing the wish to reduce their body weight. *Conclusions:* Approximately 50% of the study population was satisfied with their body image, according to the BSQ, but only about 30% were satisfied according to the silhouette scale results. This study provides information that can aid preventive actions against health events associated with body image disorders.

Keywords: Body dissatisfaction; Body image; Students, Dental; Students, Medical.

**INSATISFAÇÃO COM A IMAGEM CORPORAL, CARACTERÍSTICAS
ANTROPOMÉTRICAS E PSICOSSOCIAIS EM ESTUDANTES DA ÁREA DA
SAÚDE DE UMA UNIVERSIDADE DO SUL DO BRASIL**

RESUMO

Objetivos: A imagem corporal pode ser descrita como uma figura mental criada no próprio corpo, influenciada pela soma de todos os aspectos que envolvem os indivíduos ao longo de suas vidas. Este estudo teve como objetivo determinar a prevalência de insatisfação com a

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imagem corporal e sua possível relação com características antropométricas, demográficas e psicossociais em estudantes universitários da área da saúde. *Métodos:* O estudo tem o delineamento transversal e envolveu 281 estudantes de Medicina e Odontologia. A satisfação com a imagem corporal foi avaliada por meio do *Body Shape Questionnaire* e da Escala de Silhueta de *Stunkard*, classificando satisfação ou insatisfação. As variáveis de exposição foram sexo, idade, curso de graduação, qualidade de vida autopercebida, satisfação com o estado de saúde e o índice de massa corporal. As razões de chances foram calculadas por meio de modelos multivariados de Regressão Logística. *Resultados:* De acordo com os instrumentos utilizados, as mulheres estudantes de Medicina estavam mais insatisfeitas com o estado de saúde e com seu excesso de peso apresentando maior chance de apresentar insatisfação com a imagem corporal. Embora a população estudada tenha sido majoritariamente formada por indivíduos eutróficos ou com baixo peso, muitos se mostraram insatisfeitos, expressando o desejo de reduzir o peso corporal. *Conclusões:* Aproximadamente 50% da população estudada estava satisfeita com sua imagem corporal, de acordo com o BSQ, mas apenas cerca de 30% estavam satisfeitas com os resultados da escala de silhuetas. Assim, este estudo pode fornecer informações que podem subsidiar ações preventivas contra eventos de saúde associados aos distúrbios da imagem corporal.

Palavras-chave: Insatisfação corporal; Imagem corporal; Estudantes de Odontologia; Estudantes de Medicina.

INTRODUCTION

Body image can be described as a mental figure created upon the body itself ¹. This concept is influenced by the sum of all aspects that surround individuals throughout their lives ². As such, several factors are determinant in the construction of the image one projects of oneself and may include emotional and social experiences – for instance, past relationships, family life, and day-to-day occurrences ^{3,4}.

Numerous body image concepts seen as ideal were imposed on society along the chronological evolution of humanity. Continuously, notions of what the perfect body transforms, reveal the strength of cultural influence in the regulation of human behavior ⁵. As

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such, it is coherent for an individual to develop the tendency of shaping his/her actions and manners to what is socially acceptable, as a means of fitting certain criteria ⁶.

In this sense, the body image standard – particularly in Western societies – enforces an idea of beauty through thinness to women and, to men, through muscular bodies that are frequently directly linked to the notion of masculinity ⁷⁻⁹. The result of this imposition is a surge of body image disorders connected to problems in social life, as well as mental and physical health, that cause severe eating disorders, such as bulimia and anorexia, often in association with depression, especially among teenagers and young adults ¹⁰⁻¹².

Multiple studies on body image perception and satisfaction have examined High School students ^{4,12-14} and University students ¹⁵⁻²³ regarding the epidemiological profile of body image disorders. In this line of thought, healthcare students are a crucial group for intervention, considering this population is mainly composed of young, female students. Additionally, these undergraduates will eventually be responsible for caring for and attending to the health of the general population and, as such, must be aware of their health status.

In the current scientific landscape, while studies addressing the relationship between body dissatisfaction and anthropometric and demographic variables have been conducted, there is a noticeable gap in the specific context of healthcare students. This study explored the relationship between body image and various variables, including anthropometric and demographic characteristics. To pursue a comprehensive approach, we also incorporated the variable of satisfaction with participants' health status, which may reveal a more holistic perspective on the subject at hand. It is noteworthy that our sample was not limited solely to medical students; it was expanded to include dental students as well. This decision was made to analyze the two groups of students, thereby enriching the diversity of perspectives and experiences considered in the research.

Considering these factors, this study aimed to determine the prevalence of body image dissatisfaction and its possible link to anthropometric, demographic, and psychosocial characteristics in healthcare students at a university located in the city of Passo Fundo, Rio Grande do Sul, Brazil.

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METHODS

Study population

The analyses presented in this paper constitute a part of a wider cross-sectional study on the demographic profile, lifestyle, and health style of healthcare students from a university located in the city of Passo Fundo, Rio Grande do Sul. The research was conducted in full by the students of a Scientific Methodology class – a discipline that belongs to the Medicine curriculum – taught in the first semester of 2017.

The target population is composed of Medicine and Dentistry students from the university. From a total of 327 students enrolled in the first semester of 2017 (169 in Medicine, 158 in Dentistry), 281 took part in the research (147 in Medicine, 134 in Dentistry), that is, 85.93% of the total population participated in the study.

Outcomes

Satisfaction with body image perception was assessed through two self-reported instruments during classes:

1. The Body Shape Questionnaire (BSQ), created by Cooper et al. (1987)²⁴ and adapted to Brazilian Portuguese by Cordás and Castilho (1994)²⁵. The BSQ is a Likert scale-type questionnaire composed of 34 questions with answers ranging from 1 to 6. High scores indicate increased preoccupation and dissatisfaction with body image, especially in association with feeling overweight. The classification of results is based on the total sum of points scored: satisfaction (<80 points), mild dissatisfaction (≥ 80 and ≤ 110), moderate dissatisfaction (≥ 111 and ≤ 140), and marked dissatisfaction (≥ 140). For the bi and multivariate analyses presented in this paper, the variables were dichotomized into satisfaction (<80 points) and dissatisfaction (≥ 80 points).

2. Body image satisfaction was also evaluated through the instrument proposed by Stunkard et al. (1983)²⁶ and validated by Scagliusi et al. (2006)²⁷ using a group of Brazilian females aged between 18 and 46 years old. This instrument is a scale of nine silhouettes ranging from extreme thinness (silhouette no. 1) to extreme obesity (silhouette no. 9) (Figure 1). This scale is presented to participants, which then indicates their actual and ideal silhouettes. If the

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difference between the reported silhouettes is zero, this means that said individual is satisfied with their body image. If the difference is negative, it is an indication that the participant is dissatisfied with their body image and would like to enlarge their silhouette. On the other hand, a positive difference points to dissatisfaction with a wish to slim the silhouette. For the bi and multivariate analyses presented in this paper, this variable was dichotomized into satisfaction (difference=0) and dissatisfaction (difference \neq 0).

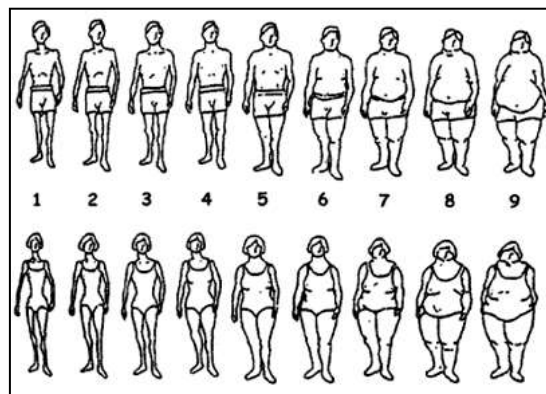


Figure 1. Silhouette scale proposed by Stunkard et al. (1983)²⁶ to assess body image satisfaction.

Exposure variables

Exposure variable data was collected through semi-structured questionnaires applied in the classroom and self-reported by students. The following types of data were collected:

1. Sex.
2. Age (Younger than 20, 20-22, Older than 22).
3. Graduation course (Medicine, Dentistry).
4. Self-perception of quality of life (assessed through the question “*How would you rate your quality of life?*”, a part of the Brazilian Portuguese version²⁸ of the Whoqol²⁹ instruments dichotomized into Good, representing “good” and “very good” answers, and Bad, representing “very bad”, “bad” and “neither good nor bad” answers).
5. Satisfaction with health status (assessed through the question “*How satisfied are you with your health?*”, also a part of the Whoqol instrument, dichotomized into

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Satisfied for the “*satisfied*” and “*very satisfied*” answers and Dissatisfied for the “*very dissatisfied*”, “*dissatisfied*” and “*neither satisfied nor dissatisfied*” answers.

6. Body Mass Index (BMI), calculated through self-reported body mass and height values and divided into the following categories: underweight ($IMC < 20 \text{ kg/m}^2$), normal ($IMC \geq 20 \text{ kg/m}^2$ and $< 25 \text{ kg/m}^2$) and overweight – used in this study in juxtaposition to the overweight ($IMC \geq 25 \text{ kg/m}^2$ and $< 30 \text{ kg/m}^2$) and obese ($IMC \geq 30 \text{ kg/m}^2$) BMI categories –, in conformity with World Health Organization guidelines ³⁰.

Analyzes

Separate analyses were made for each outcome. In the univariate and bivariate analyses, summary statistics (absolute and relative frequencies) were calculated. To examine the statistical differences between categorical variables, Pearson’s chi-squared test was employed, considering results in which the p-value was less than 5% ($p\text{-value} < 0.05$) as statistically significant. For the multivariate analyses, odds ratios (OR) were stipulated with respective confidence intervals of 95% (CI95%), crude, and adjusted by exposure variables that presented $p\text{-value} < 0.20$ in the bivariate analyses. The data was scrutinized using R software, version 3.3.3.

The research was approved by the University’s Ethics Committee (no. 2,014,228). The voluntary and confidential nature of the study and its data was relayed to students. All participants signed an informed consent form. No conflict of interest surrounding the authors was found.

RESULTS

The study population comprised mainly female university students between 20 and 22 years of age, with BMIs within the normal category, that perceive their quality of life as good and are satisfied with their health. The ratio of Dentistry to Medicine students in the population was nearly 1:1, with a modest majority of Medicine students (Table 1).

Approximately 50% of the study population was satisfied with their body image, according to the BSQ, but only about 30% were satisfied according to the silhouette scale results. The prevalence of extreme dissatisfaction, according to the BSQ, was slightly higher

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than 8%. The assessment based on the silhouette scale found that roughly 60% of the students would like to lose weight (Table 1).

Table 1. Study population characteristics. Passo Fundo, Rio Grande do Sul, Brazil, 2017.

| | No. | % |
|---|-----|------|
| Sex | | |
| Male | 76 | 27.0 |
| Female | 206 | 73.0 |
| Age | | |
| Younger than 20 | 59 | 21.4 |
| 20-22 | 140 | 50.7 |
| Older than 22 | 77 | 27.9 |
| Graduation course | | |
| Dentistry | 134 | 47.7 |
| Medicine | 147 | 52.3 |
| Self-perception of quality of life | | |
| Good | 208 | 72.7 |
| Bad | 77 | 27.3 |
| Satisfaction with health status | | |
| Satisfied | 166 | 58.9 |
| Dissatisfied | 116 | 41.1 |
| BMI^a | | |
| Underweight | 48 | 17.3 |
| Normal | 199 | 59.9 |
| Overweight | 63 | 22.7 |
| BSQ^b | | |
| No concern | 123 | 50.2 |
| Mild concern | 64 | 26.1 |
| Moderate concern | 38 | 15.5 |
| Marked concern | 20 | 8.2 |
| Body image satisfaction | | |
| Satisfied | 85 | 30.4 |
| Wants to lose weight | 162 | 57.9 |
| Wants to gain weight | 32 | 11.8 |

^a Body Mass Index

^b Body Shape Questionnaire

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Figure 2 presents the prevalence values of body image dissatisfaction according to the BMI categories for the two instruments. The results indicated that amongst underweight individuals, more than half were satisfied with their body image; 43.8% would like to maintain their current weight and 25% would like to lose weight. As to eutrophic individuals, approximately 60% would like to lose weight, in contrast to 33.1% that would like to maintain their weight. Regarding overweight individuals, 57.4% are dissatisfied with their body image, and a whopping 82% would like to lose weight (Figure 2).

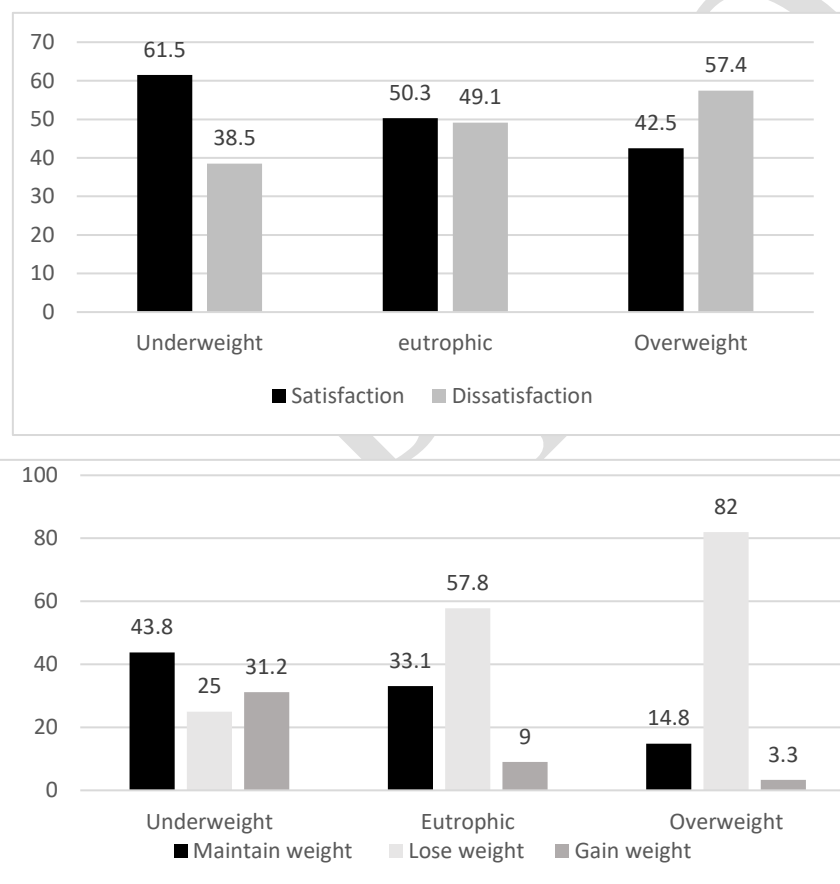


Figure 2. Prevalence values of body image dissatisfaction in healthcare university students stratified by Body Mass Index categories. Passo Fundo, Rio Grande do Sul, Brazil, 2017.

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Table 2 presents the prevalence values of body image dissatisfaction – assessed through the BSQ – for the exposure variables. A greater prevalence was found in female participants and in those who were dissatisfied with their health status ($p\text{-value} < 0.05$). As was expected, in the crude models, these variables appeared to be connected to body image dissatisfaction; however, in the adjusted analyzes, graduation course also emerged as a significant variable. As such, the *Female*, *Medicine*, and *Dissatisfied with health status* categories respectively presented chances 13.3, 2.08, and 2.08 greater of being dissatisfied with their body image in comparison to their *Male*, *Dentistry*, and *Satisfied with health status* counterparts. Furthermore, the adjusted model revealed that underweight individuals were less likely to be dissatisfied with their body image in comparison to eutrophic individuals (OR: 0.34, CI95% 0.15-0.77) (Table 2).

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Table 2. Prevalence values (%) and odds ratios (OR) with respective 95% confidence intervals (95%CI), crude and adjusted, of body image dissatisfaction (assessed through the BSQ) in healthcare university students. Passo Fundo, Rio Grande do Sul, Brazil, 2017.

| | Dissatisfaction | | | Crude model | | Adjusted model | |
|---|-----------------|------|---------|-------------|----------------|----------------|----------------|
| | No. | % | p-value | OR | CI95% | OR | CI95% |
| Sex | | | | | | | |
| Male | 14 | 20.3 | <0.001 | 1.00 | -- | 1.00 | -- |
| Female | 108 | 61.4 | | 6.19 | (3.19 – 12.01) | 13.3 | (5.76 – 30.73) |
| Age | | | | | | | |
| Younger than 20 | 26 | 52.0 | 0.748 | -- | -- | -- | -- |
| 20-22 | 63 | 51.6 | | -- | -- | -- | -- |
| Older than 22 | 31 | 64.3 | | -- | -- | -- | -- |
| Graduation course | | | | | | | |
| Dentistry | 50 | 44.2 | 0.155 | 1.00 | -- | 1.00 | -- |
| Medicine | 71 | 54.2 | | 1.58 | (0.95 – 2.64) | 2.08 | (1.13 – 3.82) |
| Self-perception of quality of life | | | | | | | |
| Good | 82 | 45.8 | 0.056 | 1.00 | -- | 1.00 | -- |
| Bad | 40 | 60.6 | | 1.74 | (0.97 – 3.01) | 0.97 | (0.48 – 1.95) |
| Satisfaction with health status | | | | | | | |
| Satisfied | 57 | 40.1 | <0.001 | 1.00 | -- | 1.00 | -- |
| Dissatisfied | 65 | 63.1 | | 2.51 | (1.48 – 4.27) | 3.24 | (1.66 – 6.32) |
| BMI^a | | | | | | | |
| Normal | 15 | 38.5 | 0.196 | 1.00 | -- | 1.00 | -- |
| Underweight | 73 | 49.1 | | 0.64 | (0.31 – 1.32) | 0.34 | (0.15 – 0.77) |
| Overweight | 31 | 57.4 | | 1.39 | (0.74 – 2.60) | 2.33 | (1.01 – 5.39) |

^a Body Mass Index

Table 3 presents the prevalence values of body image dissatisfaction – assessed through the Stunkard silhouette scale – for the exposure variables. Preponderant dissatisfaction values were found for the *Female*, *Medicine*, *Bad quality of life*, *Dissatisfied with health status*, and *Overweight* categories (p-value<0.05). In the adjusted analyzes, association with self-

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perception of quality of life ceased to be a significant variable, and, similarly to what was found in the BSQ analyses, underweight individuals presented a smaller chance of having body image dissatisfaction compared to normal BMI individuals. Consequently, *Female*, *Medicine*, *Overweight*, and *Dissatisfied with health status* individuals presented, respectively, chances 236%, 110%, 271%, and 185% greater to be dissatisfied with their body image in comparison to their *Male*, *Dentistry*, *Normal*, and *Satisfied with health status* counterparts. On the other hand, underweight individuals presented a smaller chance of having body image dissatisfaction than participants in the normal category (OR: 0.41, CI 95% 0.22-0.85) (Table 3).

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Table 3. Prevalence values (%) and odds ratios (OR) with respective 95% confidence intervals (95%CI), crude and adjusted, of body image dissatisfaction (assessed through the Stunkard scale) in healthcare university students. Passo Fundo, Rio Grande do Sul, Brazil, 2017.

| | Dissatisfaction | | p-value | Crude model | | Adjusted model | |
|---|-----------------|------|---------|-------------|---------------|----------------|---------------|
| | No. | % | | OR | CI95% | OR | CI95% |
| Sex | | | | | | | |
| Male | 45 | 60.0 | 0.040 | 1.00 | -- | 1.00 | -- |
| Female | 150 | 73.2 | | 1.75 | (1.04 – 3.05) | 3.36 | (1.70 – 6.66) |
| Age | | | | | | | |
| Younger than 20 | 47 | 79.7 | 0.189 | -- | -- | -- | -- |
| 20-22 | 95 | 68.3 | | -- | -- | -- | -- |
| Older than 22 | 51 | 66.2 | | -- | -- | -- | -- |
| Graduation course | | | | | | | |
| Dentistry | 83 | 62.4 | 0.019 | 1.00 | -- | 1.00 | -- |
| Medicine | 111 | 76.0 | | 1.90 | (1.13 – 3.22) | 2.10 | (1.19 – 3.73) |
| Self-perception of quality of life | | | | | | | |
| Good | 133 | 65.5 | 0.022 | 1.00 | -- | 1.00 | -- |
| Bad | 62 | 80.5 | | 2.17 | (1.15 – 4.1) | 1.49 | (0.72 – 3.09) |
| Satisfaction with health status | | | | | | | |
| Satisfied | 100 | 60.6 | <0.001 | 1.00 | -- | 1.00 | -- |
| Dissatisfied | 95 | 82.6 | | 3.02 | (1.71 – 5.37) | 2.85 | (1.48 – 5.49) |
| BMI^a | | | | | | | |
| Normal | 27 | 56.2 | 0.003 | 1.00 | -- | 1.00 | -- |
| Underweight | 111 | 66.9 | | 0.64 | (0.33 – 1.24) | 0.41 | (0.22 – 0.85) |
| Overweight | 52 | 85.2 | | 2.89 | (1.33 – 6.29) | 3.71 | (1.55 – 8.87) |

^a Body Mass Index

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DISCUSSION

This study noted a marked prevalence of body image dissatisfaction, especially among Medicine students, female individuals, participants dissatisfied with their health status, and overweight persons. Conversely, underweight individuals presented smaller chances of having body image dissatisfaction. The instruments used for the analyses (BSQ and silhouette scale) returned coherent results, in the same direction, demonstrating that although the study population was formed in its majority by normal or underweight BMI individuals, they were generally dissatisfied with their body image and wished, in many cases, to lose weight.

These findings follow the pattern observed in epidemiological studies involving teenage and young adult populations. Typically, women present more concern and body image dissatisfaction than men^{22,27,28,31,32}. Campana (2009)³³ found greater BSQ score averages for women (89.7) than for men (58.7) in a young adult population. Conti et al. (2009)¹¹ noted that these differences are especially wider during the teenage years and the early portion of adult life and that women are more heavily influenced by beauty standards. In a study with university students in the United Arab Emirates, the results showed that most participants were dissatisfied with their body image, and the females desired to lose weight and preferred diet, while males desired to gain weight and exercise²⁰. In this sense, Hildebrandt et al. (2010)³⁴ referred to a distinction in body image perception in the two sexes; whilst men express concerns relative to building muscle mass, women look to lose weight and slim down body structures.

This study found significant dissatisfaction among Medicine students, despite the use of control measures for possible confounding variables. However, other studies involving university students show no association of specific fields of study or courses with body image dissatisfaction. Miranda et al. (2012)¹⁸ studied body dissatisfaction in students of several courses in the primary areas of Health Sciences, Exact Sciences, and Human Sciences, finding no significant link. Advertising and Marketing, and Business Administration. A possible explanation for this discovery is that Medicine students, because of their heavy workload, have little availability to maintain an active lifestyle, which encompasses being able to perform physical activities – something that is frequently associated with positive body image perception³⁵⁻³⁷. In parallel, studies imply a pronounced prevalence of Common Mental

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Disorders (CMD) in Medicine students³⁸⁻⁴¹, which may be connected to the distinctive degree of body image dissatisfaction in this population.

Accordingly, body image dissatisfaction showed a link to dissatisfaction with current health status in this study, which reinforces the possibility that body image dissatisfaction is part of an overarching state of dissatisfaction with health in general. Fortes et al. (2011)⁴² found that self-esteem is directly related to body dissatisfaction. With that being so, low-esteem young adults would tend to present more severe body image dissatisfaction. Cavalcante Neto (2012)⁴³ and Vergui (2004)⁴⁴ noted a direct association of body image dissatisfaction with CMDs. Additionally, other studies report substantial prevalence values of CMDs in students of Majors in Health Sciences, as addressed previously.

In this study's analysis, the underweight category was shown to be inversely associated with body image dissatisfaction, whereas the overweight category is, in turn, directly associated. In general, the study population was found to want thinner physiques, even those classified in the normal and underweight BMI categories. These results are coherent with those uncovered by Kakeshita (2006)⁴⁵, Branco et al. (2006)¹³, Pereira et al. (2011)⁴⁶, Miranda *et al.* (2012)¹⁸, and Porto et al. (2015)⁴⁷. A cross-sectional study conducted at a medical college in a university in Africa found that female students with overweight, obese, or low weight have a significantly higher risk of poor body image perception according to BMI²³. Another study conducted with 1,296 university students in China revealed that individuals with high body dissatisfaction exhibited lower scores in physical activity and higher levels of restricted dietary goals, thus highlighting the impact of body dissatisfaction on the deficiency of physical activity and disordered eating behaviors among university students²¹. Another study among Chinese university students found that body dissatisfaction was higher in women than in men²². The data presented in the study underscore the influence of body dissatisfaction among university students in China on the deficiency of physical activity and overeating, suggesting that reducing body dissatisfaction has significant potential for preventing obesity²². In a study with university students in the United Arab Emirates, the results showed that most participants were dissatisfied with their body image²⁰.

This study may find a limitation in its cross-sectional characteristic, being that it does not allow the estimation of cause-and-effect relationships between exposure variables and

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outcomes. Another aspect that could have altered results is that weight and height measures were informed by the participants themselves. Studies show that individuals tend to be biased, overestimating their height, and underestimating their body weight. However, self-reported measures are still valid and acceptable reference points for the evaluation of nutritional statuses in epidemiological studies ⁴⁷.

Nonetheless, this study had as its main positive aspect the utilization of two standardized, internationally validated instruments which have also been previously validated in Brazilian populations like this study's. The results become even more robust by bearing in mind that both instruments revealed similar associations and in the same directions.

CONCLUSIONS

The results of this study demonstrated an elevated prevalence of body image dissatisfaction in Medicine students, in female individuals, in participants dissatisfied with their health status and in those who are overweight. Underweight individuals displayed smaller chances of having body image dissatisfaction. Although the study population was largely formed by individuals within normal or underweight BMI categories, they still presented body image dissatisfaction and a wish to reduce their weight.

As such, this study offers information that can be helpful for preventive measures against health events associated with body image disorders, such as eating or mental health-related disorders. The authors suggest that universities fund projects to encourage individual perceptions of health status through support groups holding meetings in the presence of therapists, physical educators, and physicians that can educate students on, among other subjects, body image.

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