

Relationship Between Nutritional Status And Body Dissatisfaction In Adolescents

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Abstract

Adolescence is a period of deep biological and psychosocial changes. Such changes can influence nutritional status, increasing the risk of body dissatisfaction and predisposing individuals to eating and psychological disorders. This study aimed to investigate the relationship between nutritional status and body dissatisfaction in adolescents. A descriptive cross-sectional study was conducted with participants aged 14 to 19, of both genders. The Body Shape Questionnaire (BSQ) was used to assess body dissatisfaction, along with the collection of weight, height, and age data. Data were analyzed using the Body Mass Index (BMI). The results showed a predominance of females (85%), with 55% classified as normal BMI. BSQ results indicated 35% with moderate concern/dissatisfaction and 30% without dissatisfaction, with a direct relationship between BMI and BSQ scores. It is concluded that there is an association between nutritional status and body dissatisfaction in these adolescents, highlighting the need for intervention by healthcare professionals, public authorities, families, and society to mitigate associated disorders and related issues.

Keywords: Adolescence. Body image. Body dissatisfaction. Body shape questionnaire. Nutritional status.

Introduction

Background

According to the World Health Organization (WHO), adolescence can be defined as a transitional phase between childhood and adulthood, encompassing the chronological age range of 10 to 19 years. It is characterized by deep biological and psychosocial changes involving significant growth and development. This period includes hormonal, functional, affective, and social transformations, physical size changes and body appearance assume essential importance, specifically during the period of physical changes, with the onset of the development of secondary sexual characteristics [1,2].

Such biological transformations can lead to alterations in nutritional status, both above and below recommended levels. When it comes to an increase in body weight related to height and raising nutritional

status to overweight categories, obesity becomes an event that adversely affects an individual's health. The prevalence of obesity has been rapidly increasing in recent decades, characterized as a true epidemic [3].

When observing Brazilian statistics between 2008 and 2016, there was an increase in overweight rates among adolescents and adults in the country, rising from 13.4% in 2008 to 17.5% in 2016. Meanwhile, the growth of obesity only in adolescents increased from 3.41% in 2008 to 6.63% in 2016. In the state of Piauí, an overweight rate of 10.64% was recorded in 2008, increasing to 14.27% in 2016, while obesity experienced a 205% increase during the same period [4].

The projection for 2030 is that approximately 254 million school-age youth (5 to 19 years old) worldwide will be living with obesity. In

Brazil, the forecast for children and young people living with obesity may exceed 7 million in the next decade, placing the country in the 5th position in the global ranking, behind only Indonesia, USA, India, and China. Concerning data makes this phenomenon a chronic disease that is challenging to control.

In the case of adolescents, they seek acceptance from their peers by attempting to resemble others in physical appearance, clothing, behavior, and thinking. Self-pressure and external expectations can trigger problems with distorted body image and, eventually, may indicate signs of eating disorders, more commonly observed in individuals of the female gender [6,7].

Body image can be defined as the mental representation we form about our bodies, encompassing what the individual thinks, how they behave, and their feelings regarding their physical appearance. It can also involve the connection of the body with one's values, individual attitudes, and beliefs [8].

Regarding the assessment of nutritional status, investigating the index and prevalence of overweight through body composition is the first step in developing effective and sustainable strategies for health promotion and the integrated prevention and control of key risk factors for chronic diseases, eating disorders, and psychological issues in adolescents. This applies to both overweight and obesity, as well as underweight [9].

Based on the hypothesis that adolescents with a nutritional status classified outside the range of eutrophy feel dissatisfied with their body image, this study aimed to examine the relationship between the nutritional status of a sample of adolescents and their level of body dissatisfaction.

Methods

A descriptive cross-sectional study was conducted with adolescents aged 14 to 19 years, of both genders, from Piauí, Brazil. Data collection was carried out through a previously tested electronic form, containing a Consent Form filled out by subjects aged 18 years or older, or by their guardian if younger. This project was approved by the Research Ethics Committee involving human subjects at the Federal University of Piauí with approval number 4,113,932.

Following the collection, which took place in October 2020, the data were tabulated, calculated, and analyzed using the growth curves proposed by the World Health Organization for body mass index for age (BMI/A) in percentiles, descriptive statistics, and Pearson's correlation coefficient through Microsoft Excel software. The

variables considered include weight (kg), height (m), age (years and months), gender, calculation and classification of body mass index (BMI), and scores obtained from the Body Shape Questionnaire (BSQ) [3,10].

The BSQ assesses the degree of body dissatisfaction based on 34 items on a Likert scale, with each response scored between 1 (never) and 6 (always). This instrument was originally developed by Cooper et al [10] and validated for Brazilian adolescents by Conti et al [7]. The questionnaire aims to measure dissatisfaction with one's body, fear of gaining weight, self-devaluation of physical appearance, the desire to lose weight, and the avoidance of situations where physical appearance attracts attention from others. According to the authors, based on the total score, four categories are established according to levels of concern about body image, namely: a sum of 80 or less indicates "absence of concern/dissatisfaction"; between 81 and 110 indicates "mild concern/dissatisfaction"; between 111 and 140 indicates "moderate concern/dissatisfaction," and a score above 140 indicates "extreme concern/dissatisfaction."

For the interpretation of the coefficient of determination (R^2) and subsequent Pearson correlation coefficient (R) between BMI and BSQ score, the following criteria were adopted [11]: 1.0 (negative and perfect correlation); -0.8 (negative and strong); -0.5 (negative and moderate); -0.2 (negative and weak); 0.0 (absence of correlation); +0.2 (positive and weak); +0.5 (positive and moderate); +0.8 (positive and strong), and +1.0 (positive and perfect). The value of R was obtained from the square root of R^2 , and the latter was calculated from the construction of the scatter plot. Subsequently, categorical data were related between BMI classification according to percentile cutoffs, as per the classification found in the BMI/A indicator, and the categories established by the BSQ.

Results

A total of 29 completed forms were returned, of which 31% ($n=9$) were from subjects outside the established age range. The 20 valid forms identified a sample predominantly composed of females (85%) with a eutrophic nutritional status (55%), followed by a portion classified as overweight (40%). Regarding the results obtained through the BSQ, the prevalence was moderate concern/dissatisfaction (35%), followed by an absence of dissatisfaction (30%). The characterization of the sample based on the initial data can be seen in Table 1.

Table 1. Sample’s characterization.

| Variable | n | % | Average (DP) ¹ | Amplitude |
|---|----|-------|---------------------------|---------------|
| Age (years) | | | 16.7 (±1.47) | 14 - 19 |
| Sex | | | | |
| Female | 17 | 85.00 | | |
| Male | 3 | 15.00 | | |
| BMI² (Kg/m²) | | | 23.21 (±3.34) | 16.14 – 28.48 |
| Underweight | 1 | 5.00 | | |
| Eutrophy | 11 | 55.00 | | |
| Overweight | 7 | 35.00 | | |
| Obesity | 1 | 5.00 | | |
| BSQ score | | | 101.95 (±36.63) | 46 - 175 |
| Absence ¹ | 6 | 30.00 | | |
| Mild ² | 4 | 20.00 | | |
| Moderate ³ | 7 | 35.00 | | |
| Extreme | 3 | 15.00 | | |
| ¹ absence of concern/dissatisfaction; ² mild concern/dissatisfaction; ³ moderate concern/dissatisfaction; ⁴ extreme concern/dissatisfaction | | | | |

When correlating BMI values with the BSQ scores obtained by each subject, an upward trend line was observed in the scatter plot, indicating that the values of the variables were directly proportional. This ascending representation partly supports the suggested hypothesis that adolescents outside the eutrophy range tend to show a greater tendency toward body dissatisfaction (Table 1). In the studied sample, subjects classified with BMI between 25 kg/m² and 26 kg/m² had the highest scores on the BSQ, reaching 175 and 160 points, respectively.

The coefficient of determination (R²) (**Figure 1**) demonstrates that 35.63% of the observed variation in the BSQ score can be explained by the variation obtained from BMI. The Pearson correlation coefficient (R) found, with a value of +0.6, indicates a positive and

moderate association between the two variables. It is important to note that higher BMI in this population does not necessarily mean overweight, as they depend on the association with age.

Upon examining the questions of greatest relevance in the BSQ scores, it was observed that in four of them, 55% of the participants answered "often," "very often," and "always" regarding the fear of gaining weight, feeling at a disadvantage when comparing their body with others, feeling bad about their physical appearance, and avoiding situations in which other people might see their body. This demonstrates the presence of some degree of dissatisfaction with body image, a common percentage in the four questions analyzed in **Table 2**.

Table 2. Most relevant results in BSQ.

| QUESTIONS | % | | | | | |
|---|----|----|----|----|----|----|
| | F | MF | S | R | AV | N |
| Have you been feeling afraid of getting fat or fatter? | 5 | 15 | 35 | 10 | 10 | 25 |
| Have you been noticing the physique of other men (women), and when comparing yourself, do you feel at a disadvantage? | 20 | 10 | 25 | 5 | 30 | 10 |
| Seeing your reflection (for example, in a mirror or store window) makes you feel bad about your physique? | 20 | 10 | 25 | 10 | 25 | 10 |
| Do you avoid situations where people might see your body (for example, changing rooms or pool showers)? | 15 | 20 | 20 | 15 | 15 | 15 |
| F - frequently; MF - very frequently; S - always; R - rarely; AV - sometimes; N - never | | | | | | |

When relating different classifications of nutritional status with the BSQ categories, moderate concern/dissatisfaction was prevalent (35%), as mentioned earlier, where three were eutrophic, three were overweight, and one was obese. Regarding the absence of body

dissatisfaction, six subjects were classified, with 83.3% of them (n=5) being eutrophic and only one underweight. In terms of extreme dissatisfaction, 15% were classified in this category, all with overweight (**Table 2**).

Discussion

When comparing the findings on nutritional status from the present study with other ones, the data appear to be similar, such as in research conducted with 371 adolescents of both genders in public schools of Aracaju/SE, where 67.4% were classified as eutrophic [12]. Similarly to our results, in a study with female adolescents of Itabaiana/SE, the findings showed that 76.1% of their sample was also eutrophic, with 5% classified as underweight [13]. Although both studies found a higher percentage of eutrophic individuals than the present research, eutrophy was the prevalent nutritional status, consistent with our results.

The prevalence of body dissatisfaction presented here, moderate (35%) and extreme (15%), was about four times higher than the findings of 14 when analyzing 378 students in Juiz de Fora/MG, where 11.4% showed some degree of dissatisfaction. This significant increase may indicate regional variations or differences in the studied populations.

When extrapolating to studies conducted outside Brazil, Solmi et al. [15] observed a higher tendency for adolescents to think they were overweight and a lower tendency to believe they were underweighting in 2015 when compared to previous data collected in 1986. Regarding questions with a higher prevalence of body dissatisfaction, the present study supports the findings of the aforementioned authors by observing the question, "Have you been afraid of getting fat or fatter?" In contrast to this survey, Amaral and colleagues [16] found that the majority showed little concern about their bodies, as the most frequent responses for the BSQ were "never" and "rarely" in a predominantly eutrophic sample, where only 13% of the subjects were overweight.

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Conclusion

We observed that the present sample showed a certain discrepancy between body self-perception and their actual nutritional status, suggesting some level of dissatisfaction with body image even for standards considered adequate and recommended from a health and disease prevention perspective. Thus, it is important to note how pressured adolescents may be to conform to aesthetic standards imposed by society.

In light of the presented results, we consider it of utmost importance for health professionals, both physical and mental, as well as families, to pay attention to adolescents who express dissatisfaction with their body image to prevent eating and psychological disorders.

Finally, we emphasize the importance of public protection for this population, addressing issues related to body self-acceptance as well as the prevention of nutritional disorders—obesity, malnutrition, and other nutritional deficiencies. This effort should involve the participation of parents or guardians, as they serve as the foundation for inspiring the habits and behaviors of their children.

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