

Prevalence and factors associated to body self-perception in students from the Brazilian Northeast region

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ABSTRACT

The objective was to assess body self-perception in students from the public education network of Campina Grande and to examine the association with sex, age and nutritional state. We conducted a cross-sectional study with 1.081 children five to ten years old. Children were weighed and measured following standardized procedures. We obtained the nutritional state through BMI/A. To assess the body perception, we used the Children's Body Image Scale. The overweight prevalence was 75.9%. Overweight and obese children had higher percentages of body dissatisfaction. Within obese children, 73.7% perceive themselves slimmer. The 94.7% of overweight, 98% of obese and 41.8% eutrophic children wished to be thinner, while 83.3% of malnourished children wished to be fatter. The most distorted body image was seen in older children and among boys. Sex, age and nutritional status can influence body perception.

Descriptors: Body Image; Body Weight; Child Health.

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INTRODUCTION

Body image refers to a multifactorial construct involving perception, thoughts, feelings, attitudes and behaviors related to oneself and other people⁽¹⁾. The construction of this perception refers to beliefs, desires, emotions and behaviors about oneself and other people. As part of body image, satisfaction and self-perception are preponderant factors in the self-concept of individuals and it can generate dissatisfaction situations (differences between perceived and the ideal body) and perception discrepancies (over- or under-estimation of a total body image or parts of it)⁽¹⁻³⁾.

Since childhood, body image is an vital self-esteem component and of the relationship involving the perception of one's body added to the experience of oneself⁽⁴⁾. In this period of life, weight gain is proportionally higher than the increase in height; once there is the phenomenon of energetic puberal repletion, where boys and girls present faster growth of the adipose tissue as an energetic reserve to be used in the phase of intense puberty growth that occurs during adolescence⁽⁵⁾. The association of this biological phenomenon with sedentarism, a behavior that also begins during this period⁽⁵⁾, makes childhood a biologically vulnerable stage for nutritional disorders and, consequently, suggestive to perceptive distortion and body dissatisfaction⁽⁴⁻⁵⁾.

Despite this vulnerability, body image from childhood is not deterministic, as occurs during adolescence, but aprioristic, because it characterizes the subject's place in the space. It allows to form an identity mediated by the contact between the subject himself and the world. This condition favors constructing a new body image obtained through experiences and not from stereotyped patterns⁽⁶⁾. However, few studies related to the theme have been targeting children, mainly developed in the United States, Australia and United Kingdom. The systematized results indicate high prevalence of body dissatisfaction and distorted image perception⁽⁷⁻⁸⁾.

To address the body image perception during childhood is essential to prevent and minimize effects created by the promotion of an ideal slim body imposed by western societies⁽⁹⁾. Thus, the school environment is noted because it allows integrated planning of preventive actions with health and education sectors⁽¹⁰⁾. Still, the schools can constitute privileged spaces to promote changes in body image concepts, awareness of the losses that weight loss conducts can trigger in health, as well as, the guidance about healthier eating habits⁽⁹⁾.

Thus, the present study intend to assess the body self-perception in children attending the public education network in the city of Campina Grande and to examine the association with sex, age and nutritional state.

METHODS

We conducted a cross-sectional study with students of Campina Grande, Paraíba/Brazil. Campina Grande is in the meso-region of the wild landscape of Paraíba, and it has a 641Km² total area. The city has urban and rural populations, being 367,278 and 17,998 inhabitants, respectively. It has 51 neighborhoods and five districts, being three rural (Galante, São José da Mata e Catolé de Boa Vista) and two urban (Catolé de Zé Ferreira and Santa Terezinha). The neighborhoods are limited as five regions: center, north, east, south and west.

During the data collection (September of 2013), the city had 120 middle schools (1st cycle) including five first school years (from 1st to 5th) covering children of five to 10 years old. There were 86 schools in the urban area (nine nucleus) and 34 in the rural area (four nucleus), assisting, respectively, 21,696 and 2,801 students. The population eligible to participate in the study included all children attending school, between five and ten years

old, from urban schools of the public education network of the city. We opted to work with school children because of few studies with this population in Brazil and, the school environment provides opportunity the adoption of preventive measures and the dialogue between health and education professionals. We did not consider children from the rural area and private schools because they represent a very small part of the group of interest.

To guarantee the representativeness of the regions and administrative diversities, schools were ordained for sampling following the distribution by nucleus adopted by the city. In each urban zone nucleus, we sorted two schools, totalizing 18. In each school, we sorted one class of each school year, corresponding to 90 classes. All children from sorted classes who were at school in the data collection day were considered eligible for the study. They represented 1,754 (342 of the first year, 341 of the second year, 348 of the third year, 346 of the fourth year and, 377 of the fifth year). From those, we excluded students who were outside the age group (students of the first and fifth year younger than five and older than ten years old) and children who had physical issues hindering the anthropometric assessment. Therefore, of the 1,754 total students, we analyzed 1,093 (251 of the first year, 261 of the second year, 243 of the third year, 204 of the fourth year and, 134 of the fifth year). Still, we excluded 12 questionnaires from the database due to incompleteness of information, totalizing 1,081 students of five to 10 years of age for data analysis, being 245 of the first year, 258 of the second year, 242 of the third year, 204 of the fourth year and, 132 of the fifth year. The flow-chart of the selection of subjects for the study is presented in Figure 1.

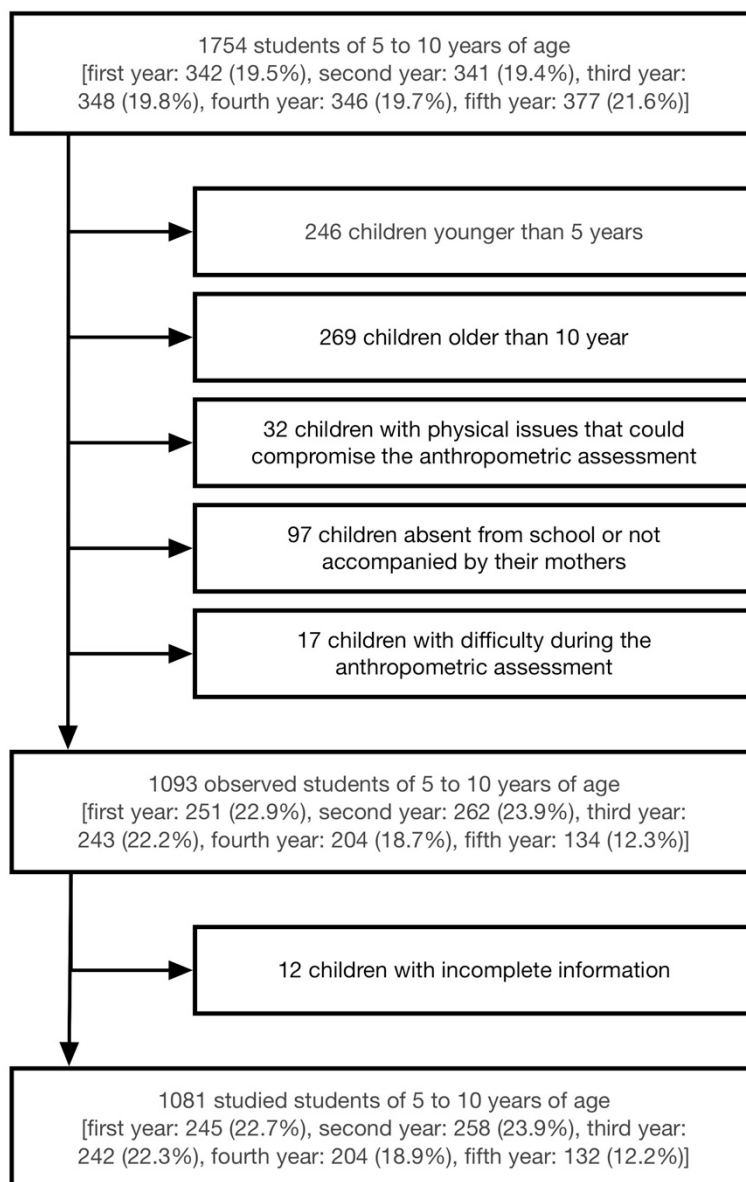
A team of health undergraduate and graduate students from Paraíba State University collected the anthropometric data. The students were trained for the standardizing of data collection measurements through a questionnaire. We created a guide manual for the measurements of height and weight, following international technique recommendations⁽¹¹⁾. We assessed body perception using the validated tool Children's Body Image Scale⁽¹²⁾.

The students had their height measured by a stadiometer (WCS®) with a 200 cm range and subdivisions of 0.1 cm. We measured height twice, accepting the maximum variation of 0.3mm, and the final measure resulted from the mean of two measurements. We weighted the children using an platform-type electronic scale with capacity for 150 kg and increments in 100g (Tanita UM-080®).

Children's nutritional state was estimated through the body mass index for the age (BMI/A) (kg/m²) and expressed in Z-score according to the reference pattern of the Multicentre Growth Study (Who Reference 5-19 years)⁽¹³⁾. Students with BMI/A < Score-z -2, ≥ Score-z -2 and < Sscore-z +1, > Sscore-z +1 and < Score-z +2, ≥ Sscore-z +2, were classified as underweight, eutrophic, overweight and obese, respectively⁽¹⁴⁾.

We used the Children's Body Image Scale⁽¹²⁾ following the recommendations. It consists of two groups of seven photographs, according to the child's sex. Each photo corresponds to a BMI (kg/m²) interval. Initially, the students received two copies of the scale. After, they were oriented to look at the first scale, when the interviewer asked the first question: Which boy/girl has the body most similar to yours? (perceived body). After, they were oriented to look at the second scale, when the interviewer asked the second question: Which boy/girl has the body that you would like to have? (desired body).

Figure 1: Flow-chart of the population selection for the study about nutritional state and eating habits of students five to 10 years of age.



We categorized the diagnosis BMI/A according to BMI intervals suggested in the scale. Thus, we defined the real body considering the categories used in the scale.

To assess the body perception of students, we considered three parameters:

- I. body vision, corresponds to the comparison between the perceived and the real body. There were three situations:
 1. the perceived body was the same as the desired one, thus the student “identifies the same as is”;
 2. the perceived body was smaller than the real, thus the student “identifies slimmer than is”;
 3. the perceived body was larger than the real, thus the student “identifies larger than is”.

- II. body dissatisfaction, corresponds to the comparison between the perceived and the desired body. There were three situations:
 1. the perceived body was the same as the desired one, thus the student “identifies the same as wished to be”;
 2. the perceived body was smaller than the desired one, this the student “identifies slimmer than wished to be”;
 3. the perceived body was larger than the desired one, this the student “identifies larger than wished to be”.
- III. body idealization, corresponds to the comparison between the real and the desired body. There were three situations:
 1. the real body was the same as the desired, thus the student “is the same as wished to be”;
 2. the real body was smaller than the desired, thus the student “is slimmer than wished to be”;
 3. the real body was larger than the desired, thus the student “is larger than wished to be”.

For each parameter, we calculated the discrepancies of body perception: body vision discrepancy (difference between the perceived and real body), body dissatisfaction discrepancy (difference between the perceived and desired body) and, body idealization discrepancy (difference between the real and desired body).

We used T-test to verify body vision, body dissatisfaction and body idealization discrepancies in function of sex. We used ANOVA with Bonferroni’s post-hoc to identify differences in function of age and BMI/A. We conducted all analyses using the software R. We considered a significant association when $p < 5\%$.

The Ethics in Research Committee of the Paraíba State University approved the research project under nº 19690513.6.0000.5187. All parents and/or legal guardians signed the Free and Informed Consent Term. We disclosed the results for the school and the Education Secretary of the city.

RESULTS

From the total of 1,081 observed children, overweight was diagnosed in 12.3% of students and obesity in 9.2% according to the anthropometric assessment.

When verifying body perception, we observed 83.8% of obese children who perceived their bodies in a contrary way, from those, 73.7% perceived themselves as slimmer and 10.1% as larger. Among overweight children, we saw altered body perception in 85.7%, among those, 75.9% perceived themselves slimmer and 9.8% larger. Among underweight children, 41.7% perceived themselves larger (Figure 2).

Regarding the body dissatisfaction, results pointed that 86.0% of students were dissatisfied with their bodies. From those, 45% wished to be slimmer and 41% wished to be larger (Figure 3).

Considering the body idealization, we observed that 98.0% of obese, 94.7% of overweight and 45.8% of eutrophic children wished to be slimmer than what they presented. Among the underweight children, 83.3% wished to be larger (Figure 4).

Figure 2: Distribution of children according to body vision, comparing the perceived with the real body.

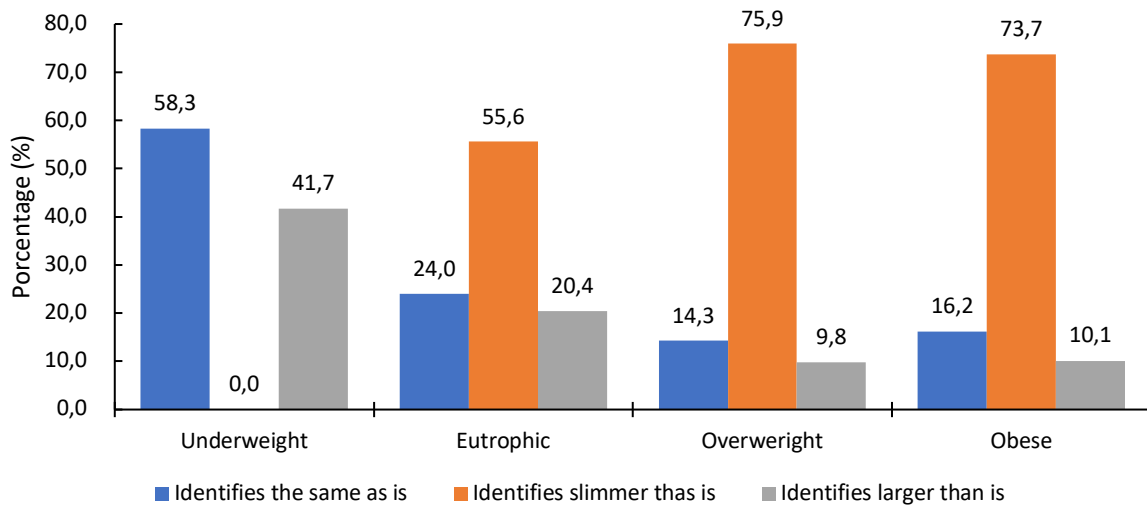


Figure 3: Distribution of children according to body dissatisfaction, comparing the perceived with the desired body.

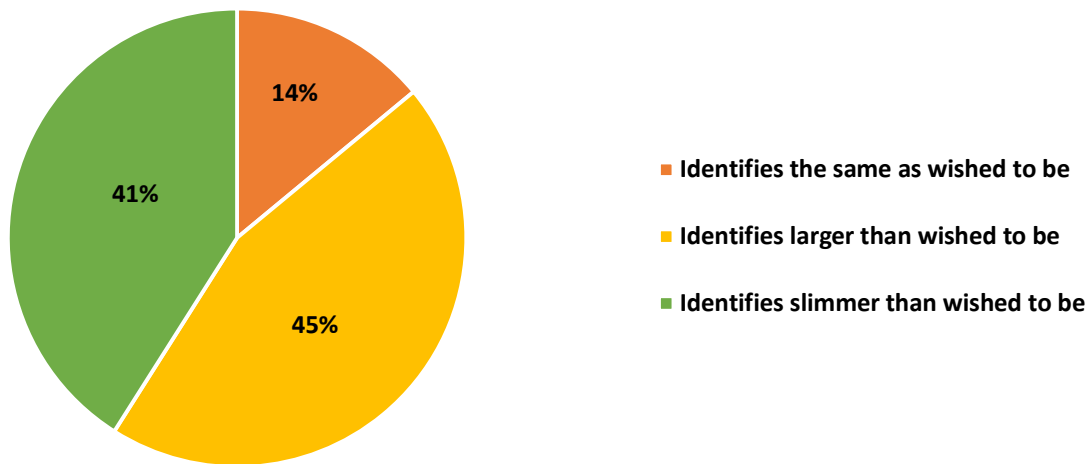
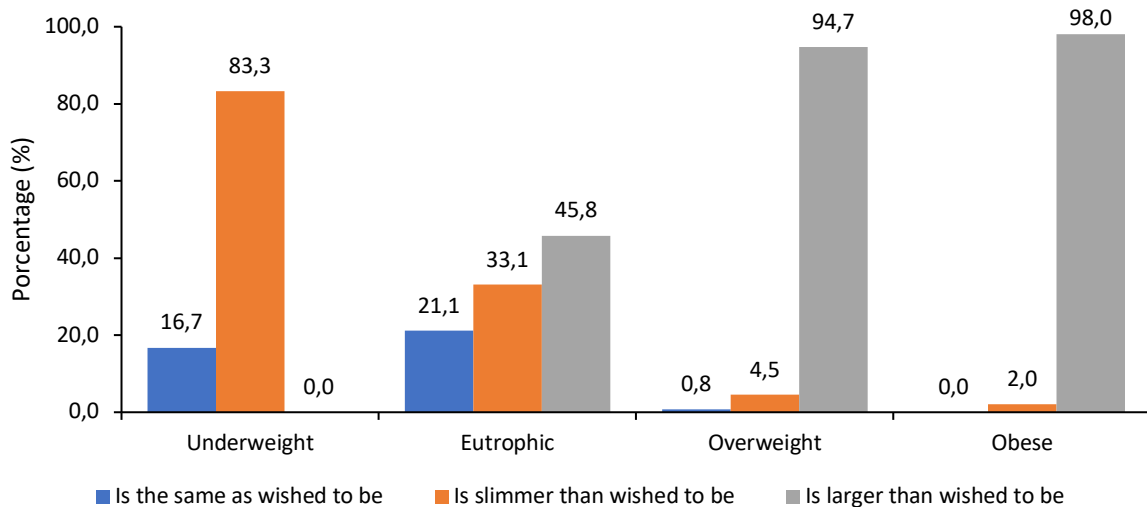


Figure 4: Distribution of children according to body idealization, comparing the real with the desired body.



We present in Table 1 the results from analyses of the body perception measures according to the child's age, sex, and nutritional state. We observed distorted (slimmer) body vision in children of 9-9,11 years and of 10-10,11 years in comparison to those younger than seven years. We obtained a similar result according to sex; a more considerable discrepancy between the perceived and real image among boys. For body dissatisfaction, we found obese and overweight children having higher means of body dissatisfaction (larger) when compared to other groups. Obese children presented, still, higher perceived discrepancy mean compared to overweight children. Regarding the body idealization (wished to be slimmer than are), we observed children of extreme ages (9-9,11 years and 10-10,11 years) with most discrepant means.

Table 1: Body perception of students: analysis of the mean differences (standard deviations) of body vision, body dissatisfaction and body idealization in function of age, sex and nutritional status. Campina Grande, Paraíba, Brazil 2014.

Body Vision (perceived body – real body)															
Age (years)					F	p	Sex		T-test						
< 7	7–7,11	8–8,11	9–9,11	10–10,11			Girl	Boy							
-0.38 (1.84) _a	-0.65 (1.48) _{ba}	-0.64 (1.57) _{ba}	-0.92 (1.16) _{bc}	-1.16 (1.20) _c	6.97	<0.001	-0.59 (1.50) _a	-0.81 (1.54) _b	0.02						
Body dissatisfaction (perceived body – wished body)															
Age (years)					F	p	BMI/A				F	p	Sex		T-test
< 7	7–7,11	8–8,11	9–9,11	10–10,11			Underweight	Eutrophic	Overweight	Obese			Girl	Boy	
-0.01 (2.34) _a	-0.22 (2.29) _a	0.05 (2.08) _a	0.12 (1.86) _a	0.14 (1.86) _a	1.05	0.37	-1.08 (2.45) _c	-0.44 (1.93) _c	1.25 (2.00) _b	2.23 (1.65) _a	79.71	<0.001	0.08 (2.28) _a	-0.087 (1.97) _a	0.19
Body idealization (real body – wished body)															
Age (years)					F	p	Sex		T-test						
< 7	7–7,11	8–8,11	9–9,11	10–10,11			Girl	Boy							
0.37 (2.36) _b	0.43 (2.25) _b	0.70 (2.14) _{ba}	1.04 (2.14) _a	1.30 (1.94) _a	6.07	<0.001	0.67 (2.33) _a	0.72 (2.10) _a	0.72						

BMI/A: Body Mass Index for Age (kg/m²); means that share the same subindexes are not significantly different among themselves (p > 0.05).

DISCUSSION

Children's anthropometric profile pointed overweight (12.3%) and obesity (9.2%) prevalences lower than prevalences reported in national level, according to the 2008-2009 Family Budget Survey that indicated rates of 33.5% and 14.3%, respectively⁽¹⁵⁾.

However, the rates are similar to estimates of developed countries indicating prevalences of excessive weight/obesity for 12.9% among male children and adolescents and 13.4% for girls⁽¹⁶⁾. Despite the highlighted differences in these prevalences, they express a public health issue representing the epidemiological moment of nutritional transition of the global and Brazilian populations, including the increase of excessive weight among children of school age⁽¹⁶⁻¹⁷⁾. Thus, the school role of implementing educational and prevention actions is noted^(10,18).

The fear of gaining weight and the constant desire to lose weight can predispose to distorted body image, such as found in previous results⁽¹⁹⁾ and the present study. When distorted, body image representation can lead to inadequate eating behaviors, dietetic restriction and possible eating disorders, generating negative consequences in the individual's life^(8,18-20). These consequences include psychiatric comorbidities, anxiety disorders, social phobia, obsessive-compulsive disorder, sadness, depression and physiopathological losses related to the metabolic and endocrine systems⁽²⁰⁾.

The high percentage of body dissatisfaction found among students of our study agrees with results of other studies^(7-8,18-19). Dissatisfaction with the own body increasingly manifests in early ages, with clear indications of dissatisfied children with the body size and/or shape⁽²¹⁾. These circumstances can be associated to standardized imagery patterns considering the social and cultural requirements of ideal weight^(6,21).

According to results of our investigation which are closer to those observed in the national and international literature^(3,7-8,22), overweight children, as well as, eutrophic ones, were unhappy with their image, idealizing a slimmer body. The desire for a thin body can be associated to the value given to this ideal, by the family and media, as a synonym of success and realization, while the excessive weight distinguishes as a characteristic of someone lazy, sad and introspective with possible losses in the quality of life⁽²³⁾.

On the other hand, the desire for a larger body structure between malnourished children in the present study is similar to another one⁽³⁾, which 60% of children with BMI lower than normal affirmed the same desire. According to the study author, it happens because this public also suffers with prejudice regarding the physical form, similarly to obese children. Still, it is discussed that sex can be an important factor involved in this relationship, as boys desire larger sizes that are valued as more muscular and representative of the male ideal^(19,22).

Results similar to ours also revealed overweight/obesity as characteristics of body dissatisfaction, showing that at the measure that the BMI increases, body dissatisfaction also increases^(7-8,24). This finding was, inclusively, synthesized in a global literature systematic review about the theme⁽²²⁾. This condition can be explained by the social influence that stigmatizes and disapproves overweight people, as well as, the media influence with its globalizing information power, diffusing an idealized appearance and an aesthetic pattern of thinness that is a stereotype as a symbol of beauty, health, success and youth^(7,19).

How the individual sees himself can be different between boys and girls, as sex can implicate different preferences and aspirations⁽²¹⁾. Whereas, following the sociocultural patterns of beauty nowadays, girls face the

conflict between the desire for thinness and physical changes, and boys experience a harmony characterized by the preference of a larger, strong and defined body, compatible with the reality of the growth period^(21,25). This conjuncture exposes the plausibility of the relationship between the sex and the body perception found not only in our study^(7,25).

We found higher discrepancy means (of body vision, dissatisfaction and idealization) in older children, that is, the more top age group representing a more distorted perception of their images. These results, which are similar to results of other authors^(22,25), can be related to transformations and body differences during the sexual maturation process that starts in more advanced ages and can lead to more concerns with physical appearance⁽²²⁻²³⁾. We observed the desire to lose weight being significantly superior in older children, reaffirming that thinness gains more importance over the years⁽²³⁾. With the increase in age, students experience physical and psychic changes that predispose to the reorganization of the body image and make them more vulnerable to sociocultural influences for an ideal body. This incongruence ends up triggering discrepancies resulting from body idealization^(6,25).

Despite the broad use in research, silhouette scales have limitations related to the recognition of the body image in the bi-dimensional form in black and white, besides the impossibility to adapt the images to different age groups⁽²³⁾. With the intention to minimize these issues, we opted to use the Children's Body Image Scale in our study, because it is a bio-dimensional instrument that facilitates the image identification, once it uses photos instead of images, and it is adapted to age groups of interest⁽¹²⁾. Thus, we have to highlight the less probability of error related to the assessment of the representation of the individual in his body, with a positive contribution for the proposed objectives.

CONCLUSION

There was an expressive prevalence of dissatisfaction with the body image, especially among students with excessive weight who idealized a slimmer figure. Besides, the most distorted body vision in older children and in boys alert to the need to consider sex, age and nutritional status of children in public policies. Therefore, we highlight the importance of health and education inter-disciplinary interventions involving body image and nutrition education through a multi-dimensional approach in the school environment. These interventions should propose changes in the concepts related to body image that allow the perception of physical and mental health losses that can be caused by the perceptive distortion, body dissatisfaction and obsession for thinner bodies. With preponderant function in the construction of care systems, the nurse can have an essential role in promoting body satisfaction in children and providing family and individual support with an integral approach in health and well-being.

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