



Factors Associated With Body Image Perception Among Brazilian Students From Low Human Development Index Areas

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Abstract

This study aimed to evaluate sociodemographic, behavioral, and individual factors associated with body image perception in a sample of adolescents from schools in low Human Development Index areas in Brazil. This cross-sectional study included 609 boys and 573 girls (aged 11–17 years). Body image perception (nine-silhouettes scale) and sociodemographic, behavioral, and individual variables were included. Multinomial logistic regression analysis was used. Most boys (76.9%) and girls (77.5%) were dissatisfied with their body image. Body mass index status and healthy body image evaluation were significantly associated with body image dissatisfaction in both boys and girls ($p < .001$), and daily fruit consumption was associated with body image dissatisfaction only in boys ($p = .035$). Education and health care focused on body image can pay special attention to young people from vulnerable areas with unhealthy nutritional status and focus on strategies that enable improving the perception of a healthy body and a healthy diet.

Keywords

body image, youth, socioeconomic factors, mental health, lifestyle

Body image is a multidimensional and dynamic concept in which the perceptions of body images and ideas are formed based on experiences, concepts, and behaviors. The relationship between the body and cognitive processes such as beliefs, values, and individual and/or social attitudes comprises body image perception, that is, an individual's perception of real and desirable body attributes (Paludo et al., 2011; Petroski, Pelegrini, & Glaner, 2012).

The evaluation of body image perception is important because it can represent the individual's susceptibility to social, cultural, and epidemiological changes in a society, and how these changes can impact self-perception (Laus et al., 2014; Petroski et al., 2012). In particular, adolescents tend to be more susceptible and influenced by social and physiological changes. The acceptance of these changes and how adolescents deal with them in front of friends, family, and community are essential to body image perception (Fidelix, Silva, Pelegrini, Silva, & Petroski, 2011). When

body image dissatisfaction occurs among adolescents, other psychological and health problems may appear, such as depression, suicidal ideation, and eating disorders (Langoni, Aerts, Alves, & Câmara, 2012; Lee & Lee, 2016). Therefore, studies should focus on epidemiological monitoring of body image perception among adolescents as well as identify variables that are associated with the presence of body image dissatisfaction in youth (Carvalho, Paiva, & Aparício, 2013;

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Farhat, Iannotti, & Caccavale, 2014; Lundberg et al., 2011; Reina et al., 2013).

Some variables have been studied as potential factors associated with body image perception among adolescents. Firstly, body image perception and its correlates tend to be designed and constructed differently between genders (Ribeiro & Oliveira, 2011). Sociodemographic characteristics, such as low socioeconomic status and opportunities for health education, as well as limited resources and access to health services; behavioral factors such as physical activity, eating habits, sexual behaviors, alcohol, and tobacco use; and individual aspects, for example, nutritional status and self-rated health, have been associated with difficulties in dealing with perception of body image among adolescents (Cortês, Meireles, Friche, Caiaffa, & Xavier, 2013; Hernando, Nunes, Torres, Lemos, & Valadas, 2013; Lamis, Malone, Langhinrichsen-Rohling, & Ellis, 2010; Langoni et al., 2012; Lundberg et al., 2011; Reina et al., 2013).

Most previous studies were conducted in developed countries (Farhat et al., 2014; Hernando et al., 2013; Lamis et al., 2010; Reina et al., 2013), while studies involving adolescents from socially vulnerable areas are scarce. Areas with high social vulnerability are common in low-and middle-income countries; this vulnerability is usually considered when the Human Development Index (HDI) is up to 0.699 (United Nations Development Programme [UNDP], 2016).

The HDI is a composite index ranging from 0 to 1 based on three dimensions of human development: a long and healthy life, access to knowledge, and a decent standard of living. It is the geometric mean of normalized indices for each of the three dimensions (UNDP, 2016).

Inhabitants in these areas tend to live in poor and high-risk conditions and have difficulty in accessing education and good nutrition (Malik, 2014). Thus, it is important to understand socioeconomic, behavioral, and individual variables that can have a negative impact on health indicators, for example, body image perception, in adolescents from these vulnerable areas.

A study exploring body image perception among adolescents can provide information to aid in developing strategies to promote health and body image satisfaction among adolescents from vulnerable areas and alleviate risk conditions for mental health issues. Thus, the present study aimed to evaluate sociodemographic, behavioral, and individual factors associated with body image perception in a sample of adolescents from schools in low HDI areas in Brazil.

Method

Study Design and Participants

This is a cross-sectional study using the baseline data from the “*Fortaleza sua Saúde*”/“Strengthen Your Health” project, a cluster-randomized controlled trial carried out in

public schools in Fortaleza, northeastern Brazil (ClinicalTrials.gov: NCT02439827). The National Research Ethics System approved the study protocol (protocol No. 17366313.9.0000.0121). Fortaleza is the capital of the state of Ceará, northeastern Brazil, and has a population of 2,452,185 inhabitants, which makes it the fifth largest city in Brazil in terms of population. This municipality has an area of 314 km² and an HDI of 0.754 (19th HDI among the 27 Brazilian state capitals (*Instituto Brasileiro de Geografia e Estatística [IBGE]*, 2010).

This study included a randomized sample of 1,182 students (609 boys and 573 girls), aged 11–17 years. They represent 92.9% of the total students enrolled in Grades 7–9 from all six full-time public schools, representing one school in each administrative region of the municipality in Fortaleza, northeastern Brazil, during the 2014 school year. The neighborhood HDI where the six schools were located was 0.170, 0.215, 0.341, 0.377, 0.443, and 0.491 (IBGE, 2010). The closer the HDI score to 1, the better the level of human development; and the closer to 0, the worse the level of development (UNDP, 2016).

Consent for students’ participation was obtained from a parent/guardian by signing an informed consent form, according to the ethical considerations advocated in Brazil. A detailed description of the sample selection and methods can be found in a previous publication (Barbosa Filho et al., 2015).

Measures and Procedures

Body image was evaluated using the nine-silhouettes scale (Stunkard, Sorensen, & Schulsinger, 1983). The nine-silhouettes scale included illustrations that range from *extremely thin* (Silhouette 1) to *extremely obese* (Silhouette 9). Students were asked to select the figure that best represented their current body shape, being the one they “think they look” most like, and the figure that best represented their desired body shape, which would be the one they “wish they looked” most like. The body image perception score was estimated by calculating the difference between real and ideal body images. Positive scores indicated that the subject is dissatisfied with being heavier than ideal or a desire to reduce silhouette. On the other hand, negative scores indicate that the subject is dissatisfied with being lighter than ideal, demonstrating a desire to increase the silhouette. Scores equal to 0 indicated body image satisfaction. This measure has acceptable reliability (2-week intraclass correlation [ICC] = 0.85; Barbosa Filho et al., 2015).

Sociodemographic, behavioral, and individual variables are potentially associated factors with body image and were evaluated using a self-reported instrument (Barbosa Filho et al., 2015). The factors used were age-groups, economic class, physical activity level, frequency of condom use, eating habits, alcohol and tobacco use, body mass index (BMI), self-rated health, and healthy body image perception.

Age was reported and organized into early, aged 11–14 years, and late adolescence, aged 15–17 years (Sanrock, 2014). Economic class was evaluated with the questionnaire from the Brazilian Association of Research Companies, which groups subjects into best (A + B) and worst (C + D + E) economic classes based on a score combining ownership of assets, parents' schooling, and number of employees in the household (Brazilian Market Research Association, 2012). Age (ICC = 0.99) and economic class (ICC = 0.93) have acceptable reliability (Barbosa Filho et al., 2015).

Physical activity was assessed using a list of 24 types of activities that were validated for Brazilian adolescents (Farias Junior et al., 2012). The weekly volume of physical activity was calculated as the product of the weekly frequency and daily duration of each activity that they performed in a typical week. Thus, the physical activity level, classified as insufficiently active or sufficiently active, was estimated based on physical activity guidelines (420 min/week; World Health Organization, 2010). Eating habits were evaluated using 2 items related to daily consumption of fresh fruit and soft drinks in a typical week (yes or no; Silva et al., 2013). Two items on current tobacco and alcohol use in the month preceding the survey, classified as yes or no, and one question on condom use in the year preceding the survey, classified as always use/never had sex and sometimes use/never use, were considered (Silva et al., 2013). These questions had an ICC ranging from 0.71 (physical activity) to 0.99 (tobacco use; Barbosa Filho et al., 2015).

BMI was calculated (body mass divided by height squared, kg/m^2) and classified according to international cutoff points (Onis, Onyango, Borghi, Nishida, & Siekmann, 2007). Self-rated health was measured using the question, "Overall, how would you rate your health?," and the answer scale was dichotomized as very good/good or regular/bad.

Finally, the nine-silhouettes scale was used to identify the students' perception of a healthy body image. The difference between real and healthy body image was calculated in order to identify whether students perceived their body image as healthy or unhealthy (yes or no). These measures had an ICC higher than .80 (Barbosa Filho et al., 2015).

The dichotomization of the outcome is due to the focus of the study on the prevalence of adolescents' perception of body image and possible associated factors. This is the reason why dichotomization was necessary, since it allows identifying the subgroups of adolescents more prone to this outcome (Barbosa Filho et al., 2015).

Data collection was conducted in July 2014. The questionnaire was administered by evaluators to students in the classroom. Data were computed by scanning using the SPHYNX® software (version 5.1) (Sphynx Software Solutions Inc., Washington, DC), with correction for error and/or inconsistencies.

Data Analysis

Absolute and relative frequencies were used for description of categorical variables. The χ^2 test for linear trends was used in order to compare variables between boys and girls. Multinomial logistic regression analysis was used to estimate odds ratio (OR) and a confidence interval (CI) of 95% CI in order to identify factors associated with body image in boys and girls separately. The dependent variable was body image perception (0 = *satisfied*; 1 = *dissatisfied, desire to reduce silhouette*; and 2 = *dissatisfied, desire to increase silhouette*). The inclusion of independent variables in the regression model was performed using a hierarchical approach (Victora, Huttly, Fuchs, & Olinto, 1997), considering three levels: sociodemographic, behavioral, and individual variables. We initially used the adjustment of the first-level variables. Analyses of subsequent levels controlled for the variables from the same level and those from the previous level. The final significance level was 5% (p value < .05 for two-tailed tests). All analyses were conducted using the SPSS 23.0 statistical software (SPSS IBM Inc., Chicago, IL).

Results

The final sample included 609 boys and 573 girls. Higher proportions of students who had the best economic condition (29.4% vs. 21.9%), who were sufficiently active (56.3% vs. 26.7%), who reported condom use sometimes/never (20.2% vs. 8.2%), and who reported current tobacco use (8.0% vs. 5.1%) were observed in boys compared to girls (p < .05). Inversely, a higher proportion of overweight/obesity (27.1% vs. 23.7%) and negative health perception (32.1% vs. 23.8%) were observed in girls (p < .05). All other variables were similar between boys and girls (p > .05, Table 1).

Most boys (76.9%) and girls (77.5%) were dissatisfied with their body image mainly because they desired to increase their silhouette (45.1% and 39.6% in boys and girls, respectively). There was no statistically significant difference between boys and girls for body image perception (p = .285, Figure 1).

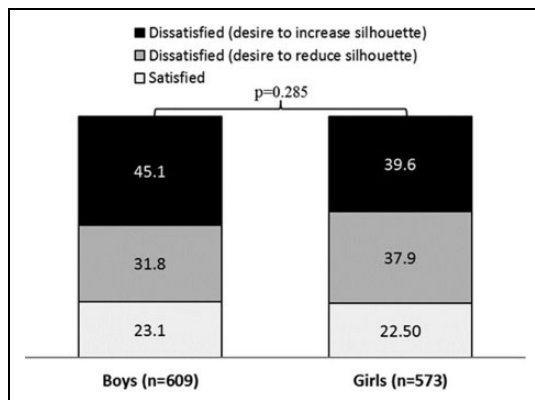
Age-groups and economic class were not associated with body image dissatisfaction among boys (p > .05). Boys who reported daily fruit consumption had a 43% lower chance of desiring to increase their silhouette in comparison to peers who did not eat fruit daily (p = .035). All other behavioral variables were not associated with body image in boys.

BMI status was an individual variable associated with body image dissatisfaction in boys (p < .001). Overweight (OR = 3.96) and obese (OR = 36.5) boys had a higher OR of desiring to reduce their silhouette when compared to normal weight boys. Also, a lower OR of desiring to increase their silhouette was observed in overweight (OR = 0.14) and obese (OR = 0.12) boys in comparison to normal weight boys (p < .001). Boys who perceived their body as an

Table 1. Description of the Sample of Boys and Girls.

Variables	Boys (n = 609)		Girls (n = 573)		p Value ^a
	n	Percentage	n	Percentage	
School grade					
Seventh	252	41.4	241	42.1	.815
Eighth	224	36.8	201	35.1	
Ninth	133	21.8	131	22.9	
Age-groups (years)					
11–14	456	75.1	465	81.4	.009
15–18	151	24.9	106	18.6	
Socioeconomic status					
C + D + E (worse condition)	425	70.6	447	78.1	.003
A + B (best condition)	177	29.4	125	21.9	
Physical activity level					
Insufficiently active	266	43.7	420	73.3	<.001
Sufficiently active	343	56.3	153	26.7	
Condom use					
Always used/Never had sex	486	79.8	526	91.8	<.001
Sometimes used/Never used	123	20.2	47	8.2	
Daily consumption of fresh fruit					
No	486	79.8	474	82.7	.199
Yes	123	20.2	99	17.3	
Daily consumption of soft drinks					
No	445	73.1	414	72.3	.752
Yes	164	26.9	159	27.7	
Current alcohol use					
No	465	76.4	445	77.7	.594
Yes	144	23.6	128	22.3	
Current tobacco use					
No	560	92.0	544	94.9	.039
Yes	49	8.0	29	5.1	
BMI status					
Normal weight	453	76.3	405	73.0	.015
Overweight	66	11.1	93	16.8	
Obesity	75	12.6	57	10.3	
Self-rated health					
Very good/good	464	76.2	389	67.9	.001
Regular/bad	145	23.8	184	32.1	
Healthy body image perception					
Had a healthy body	166	27.3	144	25.1	.406
Did not have a healthy body	443	72.7	429	74.9	

^ap value estimated using the χ^2 test.

**Figure 1.** Perception of body image among Brazilian boys and girls.

unhealthy body had higher *OR* of desiring to reduce (*OR* = 4.80, *p* < .001) or increase (*OR* = 9.89, *p* < 0.001) their silhouette in comparison to peers who perceived having a healthy body (Table 2).

In girls, sociodemographic and behavioral variables were not significantly associated with body image dissatisfaction (*p* > .05). However, BMI status and healthy body image perception were significantly associated with body image dissatisfaction (*p* < .001). Overweight (*OR* = 5.24) and obese (*OR* = 50.85) girls had a higher *OR* of desiring to reduce their silhouette in comparison to normal weight girls. Also, students from these groups had a lower *OR* of desiring to increase their silhouette compared to normal weight girls. Girls who perceived their body as an unhealthy body had a

Table 2. Factors Associated With Body Image Dissatisfaction in Boys.

Variables	Dissatisfied (Desire to Reduce Silhouette)			Dissatisfied (Desire to Increase Silhouette)		
	Percentage	OR [95% CI]	p Value ^a	Percentage	OR [95% CI]	p Value ^a
Block 1: Sociodemographic variables						
Age-groups (years)			.862			.150
11–14	32.8	Reference		43.2	Reference	
15–18	29.1	1.05 [0.61, 1.79]		50.3	1.43 (0.88; 2.33)	
Socioeconomic status			.638			.940
A + B (best condition)	33.3	Reference		44.6	Reference	
C + D + E (worse condition)	31.2	0.89 [0.55, 1.44]		45.6	0.98 [0.62, 1.55]	
Block 2: Behavioral variables						
Physical activity level			.862			.461
Insufficiently active (<420 min/week)	32.1	Reference		46.4	Reference	
Sufficiently active (≥420 min/week)	31.6	1.05 [0.61, 1.79]		44.2	0.85 [0.55, 1.31]	
Condom use			.638			.716
Always used/never had sex	32.2	Reference		44.4	Reference	
Sometimes used/never used	30.1	0.89 [0.55, 1.44]		48.0	1.10 [0.65, 1.88]	
Daily consumption of fresh fruit			.424			.035
No	30.6	Reference		47.5	Reference	
Yes	36.6	0.83 [0.52, 1.32]		35.8	0.57 [0.33, 0.96]	
Daily consumption of soft drinks			.436			.450
No	30.2	Reference		45.6	Reference	
Yes	36.0	0.79 [0.44, 1.42]		43.9	1.21 [0.74, 1.99]	
Current alcohol use			.663			.971
No	29.6	Reference		46.0	Reference	
Yes	38.9	0.88 [0.52, 1.51]		42.0	0.99 [0.56, 1.75]	
Current tobacco use			.318			.517
No	30.6	Reference		45.5	Reference	
Yes	44.9	1.31 [0.77, 2.20]		40.8	1.37 [0.53, 3.57]	
Block 3: Individual variables						
BMI status			<.001			<.001
Normal weight	16.2	Reference		57.3	Reference	
Overweight	68.2	3.96 [1.92, 8.19]		9.1	0.14 [0.05, 0.40]	
Obesity	95.9	36.51 [8.44, 157.95]		1.4	0.12 [0.01, 1.43]	
Self-rated health			.088			.173
Very good/good	28.9	Reference		45.0	Reference	
Regular/bad	41.3	1.83 [0.91, 3.67]		45.5	1.54 [0.83, 2.89]	
Healthy body image perception			<.001			<.001
Had a healthy body	20.5	Reference		27.1	Reference	
Did not have a healthy body	36.1	4.80 [2.68, 8.58]		51.9	9.89 [5.94, 16.44]	

Note. $n = 609$.

^aOdds ratio (OR), confidence interval (CI) of 95%, and p value were estimated using multinomial logistic regression. The boldface values above show the significance $p < 0.05$.

higher OR of desiring to reduce their silhouette ($OR = 4.56$) or to increase ($OR = 9.83$) their silhouette in comparison to peers who perceived they had a healthy body (Table 3).

Discussion

The present study found that approximately 8 of the 10 students were dissatisfied with their body image, with similar estimates between boys and girls. A surprising result was that most students were dissatisfied with their body image because they desired to increase their silhouette (45.1% and 39.6% in boys and girls, respectively). This dissatisfaction with body image is alarming due to adolescents'

vulnerability for eating disorders such as anorexia and bulimia and can be explained by the desirable silhouette promoted by the media, peer standards, and models (Gonçalves, Moreira, Trindade, & Fiates, 2013). Studies have revealed the presence of eating disorders in adolescents because of the influence from family, for example, strict dietary rules, exposure to media and nutritional problems, stunted growth and weight gain, and the induction of vomit or intake of laxatives as procedures to achieve the ideal body image (Fidelix, Minatto, Ribeiro, Santos, & Petroski, 2013; IBGE, 2013; Iepsen & Silva, 2014).

Elevated BMI was associated with body image dissatisfaction in both genders, which was confirmed in previous

Table 3. Factors Associated With Body Image Dissatisfaction in Girls.

Variables	Dissatisfied (Desire to Reduce Silhouette)			Dissatisfied (Desire to Increase Silhouette)		
	Percentage	OR [95% CI]	p Value ^a	Percentage	OR [95% CI]	p Value ^a
Block 1: Sociodemographic variables						
Age-groups (years)			.528			.988
11–14	38.7	Reference		39.1	Reference	
15–18	34.0	0.83 [0.47, 1.46]		42.5	0.99 [0.57, 1.72]	
Socioeconomic status			.177			.980
A + B (best condition)	31.2	Reference		44.0	Reference	
C + D + E (worse condition)	39.8	1.44 [0.85, 2.46]		38.3	0.99 [0.59, 1.65]	
Block 2: Behavioral variables						
Physical activity level			.116			.595
Insufficiently active (<420 min/week)	40.2	Reference		38.6	Reference	
Sufficiently active (≥420 min/week)	31.4	0.67 [0.40, 1.11]		42.5	0.88 [0.54, 1.42]	
Condom use			.720			.447
Always used/never had sex	37.8	Reference		39.4	Reference	
Sometimes used/never used	38.3	1.17 [0.49, 2.81]		42.6	1.40 [0.59, 3.30]	
Daily consumption of fresh fruit			.916			.615
No	38.4	Reference		38.8	Reference	
Yes	35.4	1.03 [0.56, 1.89]		43.4	1.16 [0.64, 2.09]	
Daily consumption of soft drinks			.611			.125
No	38.6	Reference		37.7	Reference	
Yes	35.8	1.14 [0.68, 1.92]		44.7	1.48 [0.90, 2.46]	
Current alcohol use			.606			.332
No	36.4	Reference		41.1	Reference	
Yes	43.0	1.16 [0.66, 2.02]		34.4	0.75 [0.42, 1.33]	
Current tobacco use			.877			.942
No	37.7	Reference		39.7	Reference	
Yes	41.4	1.09 [0.37, 3.22]		37.9	1.04 [0.34, 3.19]	
Block 3: Individual variables						
BMI status			<.001			<.001
Normal weight	21.0	Reference		52.1	Reference	
Overweight	79.6	5.24 [2.66, 10.31]		4.3	0.09 [0.03, 0.30]	
Obesity	96.5	50.85 [6.71, 385, 30]		1.8	0.31 [0.02, 5.12]	
Self-rated health			.073			.678
Very good/good	32.9	Reference		41.9	Reference	
Regular/bad	48.4	1.72 [0.95, 3.11]		34.8	1.13 [0.63, 2.02]	
Healthy body image perception			<.001			<.001
Had a healthy body	26.4	Reference		21.5	Reference	
Did not have a healthy body	41.7	4.56 [2.61, 7.97]		45.7	9.83 [5.71, 16.92]	

Note. $n = 573$.

^aOdds ratio (OR), confidence interval (CI) of 95%, and p value were estimated using multinomial logistic regression. The boldface values above show the significance $p < 0.05$.

studies (Finato et al., 2013; Glaner, Pelegrini, Cordoba, & Pozzobon, 2013; Pedroni et al., 2013). This dissatisfaction may be related to a constant “thin and beautiful” body reference used in the media, which can affect how adolescents view themselves, and thus suffer from the influence of the society of women must be thin, men must be strong (Del Ciampo & Del Ciampo, 2010; Mäkinen et al., 2015). Media and social dissemination of obesity-related health problems is important in health promotion and disease prevention in public policies, but when not satisfactorily achieved by the individual, can increase body image dissatisfaction.

The present study found a strong association between the perception of a healthy body and body image among

boys and girls. As mentioned earlier, the cognitive process of building a concept of “ideal” body image and its discrepancies with the “real” body image can be influenced by social relationships and impositions. The adolescent’s concept of a “healthy” body image is not different (Hong et al., 2015; Hyun et al., 2014; Pereira, Prado, Filipini, Felipe, & Terra, 2012; Silva, Taquette, & Coutinho, 2014), and dissatisfaction with healthy body image evaluation seems to be closely related to body image dissatisfaction. This evidence is important because health education actions can promote the understanding that patterns of a “healthy body” are not corresponding to a holistic definition of health including social and mental

aspects; combating body image dissatisfaction in adolescence seems to be important.

This study showed no association between body image and sociodemographic variables, which corroborates previous studies (Caccavale, Farhat, & Iannotti, 2012; Fidelix et al., 2011). Similarly, most behavioral variables were not associated with body image perception among boys and girls in the present study, which is different from other studies that observed a negative influence of risk behaviors, for example, physical inactivity, tobacco use, and alcohol use, on body image perception in adolescents (Caccavale et al., 2012; Lamis et al., 2010; Lundberg et al., 2011). These differences may be due to the peculiarity of the sample in terms of behavior, for example, most adolescents did not use tobacco or initiate sexual behaviors, and socioeconomic aspects, as most adolescents were from a low economic class and lived in low HDI areas.

Daily consumption of fruit was the only behavioral factor significantly and positively associated with body image perception in this study, but only among boys, that is, daily fruit consumption had a 43% lower chance of desiring to increase their silhouette in comparison to peers who did not eat fruit daily. This result shows that healthy eating habits can be important to both physical and psychological health including body image satisfaction (Barbosa, Matos, & Costa, 2011; Pérez-Gil, Paz, & Romero, 2011).

Strengths and Limitations

To our knowledge, this was one of the first studies to focus on evaluating body image dissatisfaction and associated factors in a sample of adolescents from low HDI areas. Still, the composition of potentially associated factors including socio-demographic, behavioral, and individual variables was important to show how different variables are associated with body image perception; this can guide intervention strategies focused on body image satisfaction among young people.

One limitation was the self-report measurement of some variables, especially physical activity and eating habits. Although reliable instruments were used (Barbosa Filho et al., 2015), there are possible recall limitations for these items. Also, although the measure of body image using the nine-silhouettes scale is acceptable (Fidelix et al., 2013; Stunkard et al., 1983), there was no breakdown of dissatisfaction with body image for body parts, which could indicate different results, for example, the relationship between physical activity and body image is significant for specific body parts.

In addition, due to its cross-sectional nature, it was possible to examine associations between risk factors, that is, sociodemographic, behavioral, and individual variables, and body image perception. However, it's not possible to determine their causal relationships. Finally, another limitation of this study is that it was performed locally.

Implications for Nursing Research and Practice

Education and health care focused on body image must pay special attention to young people from vulnerable areas with high BMI and focus on strategies that enable improving the perception of a healthy body and a healthy eating, especially boys.

These results suggest attention to the perception of healthy body image evaluation and eating behaviors during educational activities in the family, as well as consultations or home visits, and school contexts with health education lessons.

The results of this study can help health professionals, sectors, and institutions to identify which individual and social aspects can be the focus of effective strategies for health promotion and education among adolescents.

Authors' Note

Thábyta Silva de Araujo contributed to conception, design, acquisition of data, analysis, and interpretation of data; drafted the article; and gave final approval of the version to be published. Valter Cordeiro Barbosa Filho contributed to analysis and interpretation of data, critically revised the manuscript for important intellectual content, and gave final approval of the version to be published. Fabiane do Amaral Gubert gave final approval of the version to be published. Paulo César de Almeida critically revised the manuscript for important intellectual content and gave final approval of the version to be published. Mariana Cavalcante Martins critically revised the manuscript for important intellectual content and gave final approval of the version to be published. Queliene Gomes da Silva Carvalho critically revised the manuscript for important intellectual content and gave final approval of the version to be published. Ana Cristina Pereira de Jesus Costa critically revised the manuscript for important intellectual content and gave final approval of the version to be published. Neiva Francenely Cunha Vieira contributed to analysis and interpretation of data, critically revised the manuscript for important intellectual content, and gave final approval of the version to be published.

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