

BODY DISSATISFACTION AMONG STUDENTS IN BRAZILIAN SOUTHERN CITY

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Abstract

The body dissatisfaction is associated with eating disorders, interpersonal difficulties and suicidal ideation. The objective was to estimate the prevalence of body dissatisfaction, and its association with infant and maternal variables of school children from 4 and 5 years of municipal schools in Itajai, Santa Catarina. Seven hundred and thirty seven students from 22 urban and rural schools were randomly selected. Data collection included the collection of anthropometric data measures, questionnaires for the child and his guardian. The body dissatisfaction has been identified by the difference between perceived body image and that desired by the school children. Prevalence ratios (PR) and their 95% confidence intervals (95% CI) were calculated and. The response rate was 81.7% (n = 602). The prevalence of body dissatisfaction was 76.9%. Overweight Schoolchildren, and those with abdominal excess of fat showed higher prevalence rates (21% and 30%) of body dissatisfaction. Children of overweight parents had prevalence 12% higher of the outcome. Attempts to lose weight or fat were 23% and 21% higher among weight dissatisfied children. After adjustment, the prevalence of the outcome was lower among girls (PR 0.9 95% 0.8, 1.0) and higher among children with abdominal excess of fat who underwent attempts to lose or gain weight (PR 95 1.2% 1.1, 1.4). The results indicate a high prevalence of body dissatisfaction, especially among boys. Approximately half of the students wanted to weigh less, however, among boys the desire to gain weight was higher. The abdominal fat was strongly associated with the higher prevalence of body dissatisfaction.

Key words: Body image, Nutritional Status, Perception of body weight, abdominal obesity, Obesity, School Health.

INTRODUCTION

The body image is defined as an individual mental representation about their own body. It represents an experience that person lives constantly, deriving from actions, perceptions and impulses. It carries jointly with body own identity, and has relation with physiologic, social and affective aspects. Body image process takes the whole life; its organization is facilitated in early life due to a roll of conditions typical of this life stage¹.

Body self perception is an important aspect of body image, because reflects satisfaction and concerns about body mass. Predominant social cultural patterns may influence body satisfaction².

Sociodemographic, anthropometric factors, cultural influences, perceptions, parents concerns about children nutritional status and media pressure are factors related with body dissatisfaction^{3,4}.

The media spreads ideas about a kind of corporal perfection, in which slimness symbolizes competency, success and sexual attraction, while

obesity represents laziness, self-pity, and lower decision power and life quality⁵.

Children can overreact to cultural pressure, because they have concerns about body, and appearance in development, and more this body shed to real one, greater will be possibility of conflict, which could generate dissatisfactions with body image, and even initiate eating disorders, frequently related with low self-esteem and limited psychosocial performance^{6,7}.

The eating disorders can be considered phenomenon resulting from interaction of personal, familiar, and sociocultural factors, and are characterized by a intense concern not only with body, but with weight and also with food. The slimness valorization and pressure to lose weight, associated with biologic, familiar, and psychological factors generate a pathologic fear of gain weight⁸.

Boys are more exposed to muscular figure ideal, conveyed by dolls of superheroes. On the other hand, girls follow beauty ideal of Barbie[®] doll, tailored in a slim body. Research shows that girls are more dissatisfied with their bodies, wish

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thinner body, while among boys there is higher prevalence to wish larger bodies⁴.

In last decades, studies about body image have been increasing, mainly because evidences indicating that body dissatisfaction begins early in life, and is strongly influenced by sociocultural aspects^{4,9}. Furthermore, prospective studies have observed associations between body dissatisfactions and negative outcomes. Among adolescents of both genders body dissatisfaction was considered risk factor to depressive mood, low self-esteem and suicidal ideation, even after adjustment for psychological problems and other variables. Girls in early adolescence and boys in adolescence are considered age groups more susceptible to suicidal intention^{10,11}.

Thus, this study aimed to estimate body dissatisfaction prevalence in association with children and parent variables from 4th and 5th year students of municipal schools of Itajaí, Santa Catarina.

METHODS

Cross-sectional study with students of public schools from Itajaí/SC, enrolled in 4th and 5th year of basic instruction.

Itajaí is located in Santa Catarina state, and main economic activities of city are connected to merchant port and fishing. The full wholesale trade shows great expression, industrial section is also important, and trade of eating genders. The Port of Itajaí is the largest of Santa Catarina, stands in third position in traffic of containerized load^{12,13}.

According with Brazilian Institute of Geographic and Statistics¹⁴, census and estimated population of Itajaí was 163,218 in habitants. Itajaí presented a Gross National Product (GNP) per capita of 38,563 reais¹⁵. In 2000, the poverty prevalence was 29.47% and Human Development Index (HDI) of 0.825^{16,17}. Infant mortality rate was 10.07 per each one thousand children^{18,19}.

The town presented 39 municipal schools, with 4,587 students enrolled in 4th to 5th years. The sampling process was in double stage. In the first, 22 schools were drawn to participate. In each drawn school a roll of enrolled students were performed inway to perform the student draw to data gathering.

Sample size was estimated in software Epi Info 6.04 (EUA – Center for Control of Diseases – CDC). The literature review of studies in studied age band showed body dissatisfaction prevalence ranging 59% to 85%, then we opted to considering expected prevalence of 50% maximizing sample size. Confidence level of 95% and error margin of 5% were considered. A design effect of 1.5 was used due sampling method in double stage (n = 531), to that result 20% were added to compensate losses and refusals, and also 15% to control confound (n = 717).

Estimate to test higher body dissatisfaction prevalence among children with higher income, considered confidence level of 95%, power of 80% and prevalence rate (PR) of 1.3 among exposed,

design effect of 1.5, more 35% (losses and/or refusals and control of confounders), resulted 737 children, and was defined as sample size.

In second stage were selected those to be included in study among those enrolled in drawn schools: students were numerated and systematically selected through a sample fraction (k) obtained by division of total number of enrolled students and sample size.

Data gathering occurred between February to July 2010 and was performed by undergraduate Nutrition responsible by project, and comprised anthropometric collect data, and children and caregivers questionnaire. A Term of Informed Consent was asked to sign for children caregivers'. Students with signed term were included in the study. Losses considered those children, that after three visits to school were absence, and those without signed term.

Questionnaire have been sent by caregivers up to three days, and included questions about age, schooling (up to 8 years; 9 to 11 years and 12 or more), familiar per capita income (minimum wage R\$ 510.00) divided in tertiles: low (0.11 to 0.47), mid (0.48 to 0.78), high (0.79 to 3.27); skin color (white or lighter skinned black and black), lose or gain weight diet habit performing (yes, no), parents perception about children body weight (underweight, normal and overweight), and children health evaluation (very good, good, average/poor/very poor). Considering lower number of caregiver that self-reported their skin color as Asiatic or indigenous (1.39%, n = 7; e 1.19%, n = 2, respectively), those classified in those categories were coded as "missing". Students' skin color classified by research, and followed the same way as parents one.

A questionnaire was applied to students with body image scale – *Children's Figure Rating Scale*²¹, comprised by silhouettes with extremes of thinness and fatness. Students selected a drawing compatible with their current body; desire silhouette; opposite gender preference perceived and parents' perception about their body. Additionally, their answered questions coded as yes or no, in relation to performing attempt to lose or gain weight, diet performing and body self-perception (fat, normal or thinner).

For students' nutritional status assessment they were weighted on a digital scale manufactured by Kratos-Ca, with a maximum capacity of 150 kg, wearing minimal clothing and no shoes. The scale was fixed in plain surface, away of wall. Student stay in center of scale, barefoot, standing with feet together, arms along the body and stop this position²².

After weighting, height was measured with a compact stadiometer manufactured by Wiso, with scaled 0 to 200 cm, and precision of 0.1 cm. Students were measured barefoot, standing, in plain surface, back to stadiometer, with feet parallel and ankles together²².

The waist circumference was measured by means an inextensible anthropometric tape in its narrower perimeter, between students' last rib and iliac crest, without compressing tissues,

and was classified according cut of points proposed by Taylor et al.²³.

The Body Mass Index (BMI) was calculated dividing weight to squared height, the result of which is given in kg/m². The nutritional profile was determined through World Health Organization²⁴ criteria. Students were characterized from underweight to overweight, following the BMI to age indicator.

The data entry was performed in Epidata software, in which data enter protection have been created. The questionnaires were reviewed, coded, double-entered and conferred in Epi Info software by research.

To describe quantitative variables were calculated means and standard deviation, minimum, maximum and median values. Categorical variables were described through their absolute (n) and relative (%) frequencies, and 95% Confidence Intervals (95% CI).

The body dissatisfaction was identified by the difference between current perceived silhouette and that desired by students. The association among variables and outcome were analyzed by chi-squared Pearson test, with design effect adjustment. Correlation among continuous variables was evaluated by Pearson's correlation.

The body dissatisfaction prevalence was additionally compared with exposition variables

through PR and respective 95% CI. The adjusted analysis was performed through Poisson's Regression, with adjustment for complex design. We included in adjusted analysis those variables that kept confidence level of 25% in bivariate analysis. The input variables process in adjusted analysis initiated by children's variables followed by caregivers' variables. The $p \leq 0.05$ ²⁵ was considered in analysis. Analyses were performed through Microsoft Excel and Stata SE9 software.

The research project was submitted and approved by the Committee of Ethic in Research of University of Vale of Itajaí (UNIVALI), under protocol numbered 373/09A. The results were informed to children's caregivers and Secretary through main findings description and deliver of individual reports in each evaluated school.

RESULTS

Six hundred and two consent terms were signed by parents or caregivers of investigated students from 737 that we have sent (81.7%). Questions completeness rate ranged to 67.4% to 100% for income variable and those collected in questionnaire replied by children (Table 1).

Girls participated more in this study than boys (56.3% vs 43.7%) (Table 1). The mean of

Table 1: Description of variables for children of 4 and 5 years of municipal schools in Itajaí, SC, and their caregivers, 2010

Variables Categories	n	%	95% IC
Children's variables			
Gender (n = 602)			
Masculine	263	43.7	39.7; 47.8
Feminine	339	56.3	52.2; 60.3
Skin color (n = 597)			
White	433	71.9	68.1; 75.4
Lighter black	95	15.8	13.0; 19.0
Black	69	11.5	9.1; 14.3
Body Mass Index (n = 602)			
Underweight	56	9.3	7.2; 12.0
Eutrophic	356	59.1	55.1; 63.1
Overweight	190	31.6	27.9; 35.5
Hospitalization (n = 491)			
Yes	466	94.9	92.5; 96.6
No	25	5.1	3.4; 7.5
Lose weight attempt (n = 602)			
Yes	283	47.0	43.0; 51.1
No	319	53.0	48.9; 57.0
Gain weight attempt (n = 602)			
Yes	137	22.8	19.5; 26.4
No	465	77.2	73.6; 80.5
Diet performing (n = 602)			
Yes	198	32.9	29.2; 36.8
No	404	67.1	63.3; 70.9
Weight self-perception (n = 602)			
Very thin	27	4.5	3.0; 6.5
Thin	101	16.8	13.9; 20.1
Normal	339	56.3	52.2; 60.3
Fat	105	17.4	14.5; 20.8
Very Fat	30	5.0	3.4; 7.1
Parents' health evaluation (n = 492)			
Very good	226	45.9	41.5; 50.5
Good	209	42.5	38.1; 47.0
Poor	57	11.6	8.1; 17.3
Parents' weight perception (n = 486)			
Underweight	64	13.2	10.4; 16.6
Normal	309	63.6	59.1; 67.8
Overweight	113	23.3	19.6; 27.3

Table 1: Continuation

Variables Categories	n	%	95% CI
Parents' variables			
Skin color (n = 503)			
White	351	69.8	65.5; 73.7
Lighter black/black	139	27.7	22.2; 34.2
Marital status (n = 489)			
Married	370	75.7	71.6; 79.4
Single	119	24.4	18.0; 32.7
Per capita familiar income (n = 406)			
1 st tertile (low)	139	34.2	29.6; 38.9
2 nd tertile (middle)	132	32.5	27.9; 37.1
3 rd tertile (high)	135	33.3	28.6; 37.9
Diet performing para perder peso (n = 490)			
Yes	130	26.5	22.7; 30.7
No	360	73.5	69.3; 77.3
Weight perception (n = 485)			
Underweight	27	5.6	3.8; 8.1
Normal	191	39.4	35.0; 43.9
Overweight	267	55.1	50.5; 59.5
Satisfaction with current weight (n = 485)			
Yes	157	32.4	28.3; 36.8
More or less	128	26.4	22.6; 30.6
No	200	41.2	36.8; 45.8

Percentage (%) and 95% Confidence Interval (95% CI)

age was 9.9 years and ranged 7.7 to 14.3 years, with standard deviation wish to gain weight was higher among boys (30.8% vs 21.83%) ($p = 0,003$).

Girls presented lower prevalence of body dissatisfactions than boys. Children with BMI considered higher than ideal showed prevalence 21% higher of body dissatisfaction than those in normal range. Body perception as "overweight" represents an increase of 40% to outcome, while body image as underweight contributes with 27%. Among those that reported performing attempts to lose or gain weight, body dissatisfaction prevalence was 19% and 10% higher, respectively. Among scholars with excess of fat in abdominal region prevalence of outcome was 1.21 time higher. Children of parents with overweight had prevalence 12% higher of body dissatisfaction. Unsatisfied children parents their health rated as worst (Tables 2).

Despite that was not found difference in nutritional status classification according gender ($p=0.884$), girls presented lower prevalence of abdominal obesity than boys (PR = 0.76; 95% CI = 0.54; 1.08, $p = 0.040$). While body dissatisfaction was higher among boys, diets realization were higher among girls (36.58% vs 28.14%, $p = 0.032$).

Urban or rural school localization was not associated with body dissatisfaction (76.7% vs 80.0%) ($p = 0.797$).

The BMI were not applied in adjusted analysis, based in strong correlation with waist circumference ($r=0.91$), furthermore, in crude analysis BMI presented lower magnitude of association with the outcome.

After adjusted analysis children variables (gender, desire to lose or gain weight, and abdominal obesity), parents variables (overweight, schooling, and realizations of diets), lost their associations with body dissatisfaction in studied population. Girls presented 9% lower

body dissatisfaction than boys. Attempts to lose or gain weight were 23% and 21% higher respectively, in children unsatisfied with their body weight (Table 2).

Due to expressive difference in completeness rate of questions from questionnaire replied by parents additional analysis were performed, comparing outcome prevalence with missing categories in each variable. Prevalence exhibited by "missing" group was higher than those observed to reference categories by following variables: parents rating about children weight, overweight, skin color, schooling, marital status, performing diets and parents' satisfaction with weight (data not presented).

DISCUSSION

Prevalence of body dissatisfaction in this study was 76.91%. Therefore higher than that observed in study performed by Triches and Giugliani⁴ with schoolchildren between 8 and 10 years in Dois Irmãos and Morro Reuter, in Rio Grande do Sul (63.9%). Vilela et al.²⁰ also verified lower prevalence of body dissatisfaction (59.0%) among students with 7 to 19 years in Minas Gerais. Explanations by those differences could not be find in relation our sample gender or nutritional status, once in both studies^{4,20} most part of students was from feminine gender. Among children from Rio Grande do Sul⁴ prevalence of eutrophic (58.2%) was lower than those observed in students of this study (82.0%).

In most part of studies which included students of same age group studied, prevalence of body dissatisfaction was higher among girls²⁶, finding that also found among adolescents⁹ and adults²⁷⁻²⁸. However, among studied children, boys presented prevalence 10% higher of body dissatisfaction than girls. Similar findings were found by Conti et al.²⁹ among adolescents between 10 and 14 years in São Paulo, boys presented higher prevalence of body

Table 2: Crude and adjusted prevalence ratios (PR) and their 95% confidence intervals (95% CI) by Poisson regression, to the association of body dissatisfaction and the variables responsible for children and children of municipal schools in Itajaí, SC, 2010

Variables Categories	n	%	Crude PR (95% CI)	p*	Ajduced PR (95% CI)	p**
Childrens' variables						
Gender (n = 602)				0.011		0.058
Masculine	214	81.4	1.0		1.0	
Feminine	249	73.5	0.9 (0.8; 0.1)		0.9 (0.8;1.0)	
Skin color (n = 597)			0.333			
White	336	77.6	1.0			
Lighter black	68	71.6	0.9 (0.8; 1.0)			
Black	54	78.3	1.0 (0.9; 1.1)			
BMI to age (n = 602)				0.02		
Underweight	44	78.6	1.1 (0.9; 1.3)			
Normal	254	71.4	1.0			
Overweight	165	86.8	1.2 (1.1; 1.4)			
Abdominal obesity (n = 420)				0.002		0.002
No	360	74.2	1.0		1.0	
Yes	60	96.8	1.3 (1.2; 1.5)		1.2 (1.1;1.4)	
Hospitalization (n = 491)				0.589		
No	354	76.0	1.0			
Yes	20	80.0	1.1 (0.9; 1.3)			
Lose weight attempt (n = 602)				<0.001		<0.001
No	225	70.5	1.0		1.0	
Yes	238	84.1	1.2 (1.1; 1.3)		1.2 (1.1; 1.4)	
Gain weight attempt (n = 602)				0.056		<0.003
No	350	75.3	1.0		1.0	
Yes	113	82.5	1.1 (1.0; 1.2)		1.2 (1.1; 1.4)	
Diet performing (n = 602)				0.345		
No	305	75.5	1.0			
Yes	158	79.8	1.1 (0.9; 1.2)			
Weight self-percpetion (n = 602)				<0.001		
Below	109	85.2	1.3 (1.1; 1.4)			
Normal	227	67.0	1.0			
Above	127	94.1	1.4 (1.3; 1.6)			
Childrens' variables						
Parents health evaluation (n = 492)				0.040		
Very good	160	70.8	1.0			
Good	168	80.4	1.1 (1.0; 1.3)			
Poor	46	80.7	1.1 (1.0; 1.3)			
Parent's weight perception (n = 486)				0.004		
Underweight	48	75.0	1.0 (0.9; 1.2)			
Normal	223	72.2	1.0			
Overweight	100	88.5	1.2 (1.1; 1.3)			
Parents' variables						
Skin color (n = 503)				0.457		
White	272	77.5	1.0			
Lighter black/black	103	74.1	0.1 (0.8; 1.1)			
Married (n = 489)				0.775		
Yes	279	75.4	1.0			
No	91	76.5	1.0 (0.9; 1.1)			
Scholling (n = 364)				0.096		
Until 8 years	175	76.8	1.0			
9 to 11 years	150	78.1	1.0 (0.9; 1.1)			
12 or more years	39	65.0	0.9 (0.7; 1.1)			
Per capita familiar income (n = 315)			0.664			
1 st tertile (low)	110	79.1	1.0			
2 nd tertile (middle)	99	75.0	1.0 (0.8; 1.1)			
3 rd tertile (high)	106	78.5	1.0 (0.9; 1.2)			
Diet performing to lose weight (n = 490)				0.0		
No	263	73.1	1.0			
Yes	110	84.6	1.2 (1.0; 1.3)			
Weight satisfaction (n = 485)				0.425		
Yes	114	72.6	1.0			
More or less	100	78.1	1.1 (0.9; 1.2)			
No	155	77.5	1.1 (1.0; 1.2)			
Overweight (n = 319)				0.028		
No	145	72.1	1.0			
Yes	174	80.6	1.1 (1.0; 1.2)			

All the analysis were adjusted by design effect.

* Chi-square test

** Wald test.

BMI = Body Mass Index.

dissatisfaction than girls (40.0% and 18.5%, respectively).

In analyzing differences between genders for investigated variables were not found significant differences for major part of investigated variables (data not presented for all variables). Prevalence of overweight was similar among them, but abdominal obesity was found more frequently in boys.

In last decades, abdominal obesity became an important health concern, mainly in relation to metabolic abnormalities associated with future cardiovascular disease. Among pre-school children overweight can anticipate puberty in girls and delay in boys. Obesity in girls in pre-pubertal period can also be associated with hyperandrogenemia and higher risk of polycystic ovaries. Despite underlying biologic mechanisms are not fully understood, insulin resistance, and compensatory hyperinsulinemia represents cues to pubertal changes associated with children obesity³⁰.

The excess of fat in abdominal region is recognized, mainly, with risk factor to cardiovascular disease, diabetes, dyslipidemia and metabolic syndrome^{31,32}.

In study performed with students from Santo André³, they detected among boys statistically significant association among overweight and body dissatisfaction, in regions in which were observed accumulation of fat (stomach and waist), well as in relation to body weight; in girls, for areas as hair, buttocks, hip, thighs, legs, stomach, shoulders/back, muscular tone, body weight and general aspects, i.e., boys and girls reported dissatisfaction with stomach and body weight³.

Nearly half of investigated students in both genders would like to lose weight, but, desire to gain weight was virtually twice higher among boys. These behaviors also can be noticed by other research, which observed that boys desired larger silhouette than current, indicating stronger bodies^{4,5}. Boys can interpret larger drawings as more muscular or older.

The desire to lose weight as similar among boys and girls, but performing diets was more frequently observed in girls (36.58%). Those findings reinforce those of Vilela et al.,²⁰ in which 40% of students performed some kind of diet, mainly among girls.

Fear to gain weight and persistent desire to lose weight can initiate an excessive concern with food, and consequently, an alteration of eating behaviors, with dietetic restrictions, joint with physical activity planned to reduce weight³³.

Nunes et al.³⁴ pointed out that body image dissatisfaction can be strongly associated with possible eating disorders, fact that deserves attention especially because of its consequences in individual life.

In this study, the prevalence of body dissatisfaction was 79.8% among students that admitted performing diets. According Salles e Fiates³⁵ the practice of diets is already part of life of a significant number of pre-adolescents. Feminine gender is often more vulnerable to social,

economic, cultural pressure, associated with esthetic patterns. There is evidence in literature about higher mother sensibility to girl's body weight. Mothers showed higher concern with weight gain and higher probability to adopt food intake restrictions to their daughters³⁶.

Children of overweight parents presented prevalence 12% higher of body dissatisfaction. Several studies found association among familiar context aspects before and after child's birth and children overweight³⁷, among their parents' overweight stands out^{38, 39, 40}. Beyond the risk to have overweight (factor strongly associated with body dissatisfaction), the coexistence with mothers concerned about their body weight can promote a less favorable vision about children own body image⁴¹.

Among limitations of this study we can point out the cross-sectional design. Children were evaluated once, in this way, it is not possible to determine temporal direction of observed associations among investigated variables and outcome, i.e., define if they represent cause or consequence of body dissatisfaction. Association analysis of exposition variables and outcome can be harm by refuses, related to absence of consent term by parents. Furthermore, relative homogeneity of evaluated, all from public municipal schools, probably be the principal reason for absence of association among socioeconomic variables and the outcome. Inclusion of children of urban and rural area and analysis of outcome prevalence in not completely questionnaires represents important advantages of this study.

CONCLUSIONS

The findings of this study indicated high prevalence of body dissatisfaction among the evaluated children, mainly among boys. Nearly half part of the students of both genders desired to have lower weight, however among boys desire to gain weight was higher. The abdominal obesity was strongly associated with higher prevalence of body dissatisfaction among the evaluated children. Those results must be considered by caregivers and health professionals.

Contributions:

Leite, ACB: study conception, data collect, paper writing; Ferrazzi, NB: study conception, data collect, paper writing; Mezadri, T: study conception, critical review of paper; Höfelmann, DA: study conception, data analysis, paper writing.

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