

# Body dissatisfaction and common mental disorders in adolescents

*Insatisfação corporal e transtornos mentais comuns em adolescentes*

*Insatisfacción corporal y trastornos mentales comunes en adolescentes*

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## ABSTRACT

**Objective:** To verify the prevalence of body dissatisfaction in adolescents and its association with socioeconomic, behavioral, anthropometric, and psychosocial factors, especially with the presence of common mental disorders.

**Methods:** Adolescents from a school in Itajaí, Southern Brazil, had anthropometric measurements for body mass index analysis, and completed a questionnaire on personal data and common mental disorders. The primary outcome was the presence of body dissatisfaction and the adjusted analysis of associated factors was performed by Poisson regression. Prevalence ratios and their respective 95% confidence intervals (95%CI) were calculated.

**Results:** A total of 214 adolescents (77.5%) with a mean age of 12.4, years predominantly females (65.4%), were enrolled. Most of the adolescents were classified as eutrophic (79.4%), and 28.0% had indicative scores for common mental disorders. The prevalence of body dissatisfaction was 74.3% (95%CI 67.9–80.0). Factors identified as associated with body dissatisfaction were: lower maternal schooling, abdominal obesity, perception of the nutritional state as above or below the weight, interference of physical shape in daily activities, and relationships. The presence of common mental disorders was associated with body dissatisfaction after adjusted analysis at the level of 6.6%.

**Conclusions:** Most adolescents presented body mass index and waist circumference within the normal range; however, high prevalence of body dissatisfaction was noted

in both genders. Maternal variables and behaviors related to body weight were associated with the outcome. In relation to the common mental disorders, the association was close to the adopted significance threshold.

**Key-words:** body image; adolescents; mental disorders; body mass index.

## RESUMO

**Objetivo:** Verificar a prevalência de insatisfação corporal em adolescentes e sua associação com fatores socioeconômicos, comportamentais, antropométricos e psicossociais, em especial a presença de transtornos mentais comuns.

**Métodos:** Foram estudados adolescentes de uma escola de Itajaí, nos quais foram realizadas medidas antropométricas para análise do índice de massa corpórea. Aplicou-se um questionário sobre dados pessoais e transtornos mentais comuns. O desfecho principal foi a presença da insatisfação corporal, sendo a análise ajustada dos fatores associados realizada por meio da regressão de Poisson. As razões de prevalência e seus respectivos intervalos de confiança de 95% (IC95%) foram calculados.

**Resultados:** Foram avaliados 214 adolescentes (77,5%) com idade média de 12,4 anos e predomínio do sexo feminino (65,4%). A maioria dos adolescentes avaliados foi classificada como eutrófica (79,4%) e 28,0% deles apresentaram escores indicativos de transtornos mentais comuns. A prevalência de insatisfação corporal foi de 74,3%, (IC95% 67,9–80,0).

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Fonte financiadora: Univali e Governo do Estado de Santa Catarina – Bolsa de Pesquisa – Artigo 170, 1686

Conflito de interesse: nada a declarar

Recebido em: 13/3/2012

Aprovado em: 30/7/2012

Dentre os fatores associados ao desfecho, destacaram-se: menor escolaridade materna, obesidade abdominal, percepção do estado nutricional como acima ou abaixo do peso, interferência da forma física em atividades diárias e relacionamentos. A presença de transtornos mentais comuns esteve associada, após análise ajustada, ao nível de 6,6% à insatisfação corporal.

**Conclusões:** A maioria dos adolescentes possuía índice de massa corporal e circunferência da cintura dentro da normalidade; entretanto, grande parte relatou insatisfação com a imagem corporal, em ambos os sexos. Variáveis maternas e comportamentos relacionados ao peso corporal estiveram associados ao desfecho. Para transtornos mentais comuns, a associação foi próxima ao limiar de significância adotado.

**Palavras-chave:** imagem corporal; adolescente; transtornos mentais; índice de massa corporal.

## RESUMEN

**Objetivo:** Verificar la prevalencia de insatisfacción corporal en adolescentes y su asociación con factores socioeconómicos, comportamentales, antropométricos y psicosociales, en especial la presencia de trastornos mentales comunes (TMC).

**Métodos:** Se estudiaron adolescentes de una escuela de Itajaí, realizándose las medidas antropométricas para análisis del Índice de Masa Corporal (IMC) y aplicación de cuestionario sobre datos personales y TMC. El desenlace principal fue la presencia de la insatisfacción corporal, siendo el análisis ajustado de los factores asociados realizada por medio de la Regresión de Poisson y calculadas razones de prevalencia (RP) y sus respectivos intervalos de confianza de 95% (IC95%).

**Resultados:** Se evaluaron 214 adolescentes (77,5%), con promedio de edad de 12,4 años y predominio de muchachas (65,4%). La mayoría de los adolescentes evaluados fue clasificada como eutrófica (79,4%) y 28,0% presentaron escores indicativos de TMC. La prevalencia de insatisfacción corporal fue de 74,3% (IC95% 67,9–80,0). Entre los factores asociados al desenlace se destacaron: menor escolaridad materna, obesidad abdominal, percepción del estado nutricional como superior o inferior al peso, interferencia de la forma física en actividades diarias y relaciones. La presencia de TMC estuvo asociada, después de análisis ajustado, al nivel de 6,6%.

**Conclusiones:** La mayoría de los adolescentes poseía IMC y circunferencia de la cintura dentro de la normalidad; sin embargo, gran parte relató insatisfacción con la imagen corporal en ambos sexos.

Variables maternas y comportamentales relacionadas al peso corporal estuvieron asociadas al desenlace. Para TMC, la asociación fue cercana al umbral de significancia adoptado.

**Palabras clave:** imagen corporal; adolescente; trastornos mentales; índice de masa corporal.

## Introduction

Body image is the way individuals mentally visualize their own body. It is a kind of “mental portrait”, it means, a picture of their physical appearance, size, image, and body shape, through which individuals expressing feelings related to these characteristics. In a society that overvalues strong and thin bodies, it is common to find people highly dissatisfied with their own appearance<sup>(1)</sup>. Body dissatisfaction has been frequently identified as the difference between the perception and the desire for a body size and shape<sup>(2)</sup>.

Among the different age groups, adolescents are the most vulnerable to the pressures of society regarding body appearance, because they are in a stage of life marked by physical, psychological, emotional and cognitive changes and by a great increase in the concern with physical appearance, which may significantly affect eating habits, nutritional health, and the perception of their own body<sup>(3)</sup>.

Abnormal eating behaviors and inappropriate practices to control weight are usually related to body dissatisfaction, including: use of diuretics and laxatives, self-induced vomiting, performance of extenuating physical activity, and other eating disorders<sup>(4,5)</sup>. Additionally, body dissatisfaction affects adolescent's self-image and self-esteem, and may predispose to psychological disorders, such as Common Mental Disorders (CMDs)<sup>(6)</sup>.

CMDs, also known as minor psychological disorders, represent less severe and more frequent pictures of mental disorder. They occur both in youngsters and in adults, and factors such as low schooling, female gender, unemployment, low social status, and a stressful environment may be associated with a higher prevalence of mental conditions<sup>(7)</sup>. Among the symptoms that characterize CMDs are those considered as non-psychotic depressive symptoms, such as: reduction in daily activities, antisocial behavior, loss of self-esteem, anxiety, forgetfulness, difficulty in concentrating and making decisions, lack of appetite and bad digestion, causing impairments in adolescent's daily activities. This kind of disorder encompasses signs and symptoms that may have somatic manifestations, becoming thus a public health issue. The incidence of CMDs

is increasing and they are highly prevalent in the general population, reaching 40% in Brazil<sup>(7)</sup>.

Considering the importance of early investigation on the presence of body dissatisfaction and its possible relationship with mental disorders in adolescents, as well as the scarce studies associating body dissatisfaction with nutritional status and the presence of these disorders, the aim of the present work was to estimate the prevalence of body dissatisfaction and its association with socioeconomic, anthropometric, behavioral and psychosocial factors, mainly CMDs, in adolescents from 5<sup>th</sup> to 8<sup>th</sup> grade of a school in Itajaí, state of Santa Catarina, Brazil.

## Methods

This is a cross-sectional study with adolescents of both sexes, enrolled from 5<sup>th</sup> to 8<sup>th</sup> grade in a public school of Itajaí. The municipality of Itajaí is located in the Itajaí Valley region, and its main economic activities include its Harbor, fishery, the wholesale trade of fuel, and the industrial production sector. According to the Brazilian Institute of Geography and Statistics, the registered population of Itajaí was 183,388 inhabitants. In the year of 2011, the Itajaí Municipal Department of Education reported 27,094 students enrolled in public schools<sup>(8)</sup>.

The analyzed school had 764 students enrolled. Children were drawn in their classrooms to participate in the survey. During the data collection period, it was observed that the number of students who attended school daily was lower than that initially estimated for sample calculation. Therefore, in the end of the survey, based on the prevalence of body dissatisfaction obtained among the schoolchildren effectively assessed (74.3%), sample size was calculated again, maintaining the 95% confidence level and a margin of error of 5%, totaling 212 students. Calculations were performed using the Epi-Info 6.04 software (Center of Control of Diseases).

The survey included the collection of anthropometric data and the application of questionnaires by the researchers. Data collection was conducted after being approved by the Ethics Committee of Universidade do Vale do Itajaí (UNIVALI). The study included schoolchildren who had the Free and Informed Consent (FIC) duly signed and excluded adolescents who refused to participate in the survey or whose guardians did not allow them to participate in the study, or those who were absent on the day when the consent was handed in or when data was collected.

During school time, adolescents were divided into groups to answer the questionnaires and have their anthropometric

measurements taken. Firstly, they answered a questionnaire covering socioeconomic, socio-cultural and personal issues. Next, participants received a questionnaire including a body image scale — Children's Figure Rating Scale<sup>(9)</sup> —, with nine numbered silhouettes showing extremes of thinness and stable fat. Adolescents should select the figure compatible with their current size. Body dissatisfaction was identified by comparing the self-reported current image with the image desired by the adolescent.

CMD screening was performed using the Self-Reporting Questionnaire (SRQ-20), an instrument developed to screen for psychiatric disorders in primary health care centers, validated in Brazil and recommended by the World Health Organization<sup>(10)</sup>. This questionnaire asked participants about possible health problems that they might have had during the past month. We adopted a cut-off point of eight positive responses to SRQ-20 items to consider the presence of symptoms indicative of CMDs; this cut-off point shows high sensitivity and low false-positive rate<sup>(11)</sup>.

After questionnaires were completed, students' nutritional status was assessed. The participants were weighed on a digital scale manufactured by Kratos-Ca, with a maximum capacity of 150kg, wearing minimal clothing and no shoes. Waist circumference was measured using a non-stretching anthropometric tape at the narrowest circumference, between the lowest rib and the iliac crest, without pressing the tissues, and was classified as proposed by Taylor *et al*<sup>(12)</sup>. After measuring the weight, height was measured using a digital stadiometer manufactured by Soehnle. The Body Mass Index (BMI) was calculated and compared with the reference population from the WHO (2007)<sup>(13)</sup> and the participants were classified according to the cut-off points proposed by the Brazilian Ministry of Health<sup>(14)</sup>.

The questionnaires were revised and codified by the researchers. The recorded data were typed into a spreadsheet. To describe quantitative variables, we calculated means and standard deviations, as well as minimum, maximum and median values. Categorical variables were described by their absolute (*n*) and relative (%) frequencies. The association between the outcome and the other variables was analyzed using the Pearson's chi-square test. The prevalence of body dissatisfaction was compared among the categories of exposure variables by Prevalence Ratios (PR) and their respective 95% Confidence Intervals (95%CI). The adjusted analysis was performed using Poisson Regression.

The inclusion of the variables in the model followed a hierarchical model of analysis in which  $p < 0.25$ , beginning

**Table 1** - Descriptive variables of adolescents from 5<sup>th</sup> to 8<sup>th</sup> grade of a public school in Itajaí, state of Santa Catarina, Brazil, 2011

	n	%
Sex (n=214)		
Female	140	65.4
Male	74	34.6
Age (n=214)		
10-12 years	110	51.4
13-16 years	104	48.6
Ethnicity (n=210)		
White	124	59.1
Brown, black or yellow	86	41.0
Maternal schooling (n=184)		
0-8 years	112	60.9
>9 years	72	39.1
Nutritional status (n=214)		
Thinness	5	2.3
Eutrophy	170	79.4
Overweight	21	9.8
Obesity	18	8.4
Abdominal obesity (n=213)		
No	180	84.5
Yes	33	15.5
Satisfaction with body image (n=214)		
Yes	55	25.7
No	159	74.3
Body interference in daily activities (n=212)		
No	158	74.5
Yes	54	25.5
Body interference in personal relationships (n=212)		
No	122	57.6
Sometimes	90	42.5
Intention of undergoing a plastic surgery (n=213)		
No	174	81.7
Yes	39	18.3
Indications of depressive disorders (n=214)		
No	154	72.0
Yes	60	28.0

with the socioeconomic/demographic variables, followed by anthropometric variables, perceived nutritional status, behaviors related to body image and, finally, positive results for CMDs. Variables with  $p < 0.10$  remained in the model. Associations were considered significant at 5%. The analyses were developed using Microsoft Excel, Epi-Info 6.04 and Stata SE9 software applications.

## Results

At the end of the study, 214 adolescents were assessed, and 62 adolescents did not return the FIC or refused to participate in the survey. Mean age was  $12.4 \pm 1.7$  years, ranging from 10 to 16 years, with a predominance of females (65.4%) (Table 1).

Maternal and paternal schooling showed similar means (7 and 8 years, respectively); however, the maximum value was 17 years for mothers and 13 years for fathers. As for skin color/ethnicity, 59.1% of the students declared to be white. Most of the assessed adolescents were classified as eutrophic (79.4%), 9.8% were overweight, and 8.4% of the respondents were obese. It could be observed that 15.5% of the adolescents had excessive fat mass in the waist region.

Approximately three-quarters of the students were dissatisfied with their body image (74.3%; 95%CI 67.9-80.0). Among girls, the desire to have a thinner body image (48.6%,  $n=68$ ) was more frequent than in boys (35.1%,  $n=26$ ). Among boys, the frequency of the desire to gain (36.4%) or to lose weight (35.1%) was similar, and the desire to have a larger body image was higher than that observed in girls, 36.5 and 27.1% respectively.

A total of 42.5% ( $n=90$ ) of the adolescents believed that their body hindered interpersonal relationships and 25.5% thought that it interfered with their daily activities. The intention of undergoing a plastic surgery was reported by 18.3% of the respondents, and the main site mentioned was the abdominal region (51.3%), followed by face (23.1%), breasts (12.8%), buttocks (10.3%), and arms (5.1%).

Among the items indicative of depressive disorders, the most reported were: nervousness (51.9%), immediate fatigue during activities (39.2%), feeling of sadness (39.2%), frequent headaches (34.6%), unpleasant sensations in the stomach (34.3%), getting easily scared (32.2%), frequent excessive fatigue (32.1%), and difficulty in thinking clearly (31.6%).

Table 2 shows the factors associated with body dissatisfaction. Among the socioeconomic/demographic variables,

**Table 2** - Risk factors associated with body dissatisfaction in adolescents from 5<sup>th</sup> to 8<sup>th</sup> grade of a public school in Itajaí, state of Santa Catarina, Brazil, 2011

	Body Dissatisfaction		Unadjusted PR (95%CI)	p-value*	Adjusted PR (95%CI)	p-value*
	n	%				
Sex				0.526	**	
Male	53	71.6	1			
Female	106	75.7	1.06 (0.89–1.26)			
Age group				0.394	**	
10–12 years	79	71.8	1			
13–16 years	80	76.9	1.07 (0.91–1.25)			
Color of skin				0.309	**	
White	89	71.8	1			
Brown, Black, Yellow	67	77.9	1.09 (0.93–1.27)			
Maternal schooling						
0–8 years	92	82.1	1.21 (1.01–1.45)		1.21(1.01–1.45)	
>9 years	49	68.1	1		1	
Overweight				0.052	**	
No	126	72.0	1			
Yes	33	84.6	1.17 (1.00–1.38)			
Abdominal obesity				0.001		<0.001
No	128	71.1	1		1	
Yes	30	90.9	1.28 (1.11–1.47)		1.32 (1.14–1.53)	
Perceived nutritional status				<0.001		0.038
Underweight	26	86.7	1.32 (1.09–1.60)		1.26 (1.03–1.55)	
Normal weight	83	65.4	1		1	
Overweight	48	88.9	1.36 (1.16–1.59)		1.19 (0.98–1.46)	
Body interference in activities				<0.001		0.001
No	105	66.5	1		1	
Yes	52	96.3	1.45 (1.28–1.64)		1.22 (1.08–1.39)	
Body interference in personal relationships				<0.001		<0.001
No	74	60.7	1		1	
Yes	83	92.2	1.52 (1.30–1.78)		1.41 (1.20–1.65)	
Attempts of losing weight				0.023	**	
No	85	68.6	1			
Yes	73	82.0	1.20 (1.03–1.40)			
Indications of depressive disorders				<0.001		0.066
No	105	68.2	0		1	
Yes	54	90.0	1.32 (1.15–1.51)		1.15 (0.99–1.32)	

PR: prevalence ratio; CI: confidence interval; \*Wald's test; \*\*Variables with  $p \geq 0.10$  in the adjusted analysis, excluded from the multivariate model

**Table 3** - Association of variables indicative of common mental disorders with body dissatisfaction, in adolescents from 5<sup>th</sup> to 8<sup>th</sup> grade of a public school in Itajaí, state of Santa Catarina, Brazil, 2011

	Body Dissatisfaction		Unadjusted PR (95%CI)	p-value*	Adjusted PR (95%CI)	p-value*
	n	%				
Headache					**	
No	96	69.6	1	0.017		
Yes	61	83.6	1.20 (1.03–1.40)			
Lack of appetite					**	
No	118	72.4	1	0.113		
Yes	38	82.6	1.14 (0.97–1.34)			
Insomnia					**	
No	127	72.6	1	0.078		
Yes	32	84.2	1.16 (0.98–1.37)			
Getting easily scared						0.008
No	98	68.5	1	0.001	1	
Yes	59	86.8	1.27 (1.10–1.46)		1.22 (1.06–1.42)	
Hand tremors					**	
No	122	72.6	1	0.054		
Yes	34	85.0	1.17 (1.00–1.37)			
Nervousness, tension or concern					**	
No	69	67.7	1	0.031		
Yes	89	80.9	1.20 (1.02–1.41)			
Bad digestion					**	
No	135	75.0	1	0.63		
Yes	19	70.4	0.94 (0.72–1.22)			
Difficulty in reasoning					**	
No	105	73.4	1	0.542		
Yes	51	77.3	1.05 (0.89–1.24)			
Sadness					**	
No	92	71.3	1	0.169		
Yes	66	79.5	1.11 (0.95–1.30)			
Frequent crying						0.006
No	122	70.9	1	0.002	1	
Yes	33	89.2	1.26 (1.08–1.46)		1.24 (1.07–1.45)	
Dissatisfaction in the developed activities						0.016
No	113	69.9	1	0.001	1	
Yes	40	88.9	1.27 (1.10–1.47)		1.20 (1.04–1.40)	
Difficulty in making decisions					**	
No	84	68.3	1	0.012		
Yes	74	83.2	1.22 (1.04–1.42)			
Difficulties at work					**	
No	141	72.7	1	0.001		
Yes	16	94.1	1.29 (1.12–1.50)			
Feeling of not playing a useful role in life						0.015
No	132	71.7	1	<0.001	1	
Yes	25	92.6	1.29 (1.12–1.49)		1.20 (1.04–1.39)	
Lack of interest					**	
No	106	69.3	1	0.001		
Yes	53	88.3	1.28 (1.11–1.47)			

continues...

Table 3 - Continuation

	Body Dissatisfaction		Unadjusted PR (95%CI)	p-value*	Adjusted PR (95%CI)	p-value*
	n	%				
Sense of uselessness					**	
No	121	71.6	1	0.024		
Yes	36	85.7	1.20 (1.02–1.40)			
Suicidal ideas					**	
No	140	74.1	1	0.642		
Yes	18	78.3	1.06 (0.84–1.33)			
Excessive fatigue during the day					**	
No	102	70.8	1	0.053		
Yes	56	82.4	1.16 (1.00–1.35)			
Unpleasant sensations in the stomach					**	
No	105	76.1	1	0.551		
Yes	52	72.2	0.95 (0.80–1.13)			
Fatigue with physical activities					**	
No	92	71.3	1	0.169		
Yes	66	79.5	1.11 (0.95–1.30)			

PR: prevalence ratio; CI: confidence interval; \*Wald's test; \*\*Variables with  $p \geq 0.10$  in the adjusted analysis, excluded from the multivariate model

only maternal schooling was associated with body dissatisfaction. Adolescents whose mothers had less than nine years of education showed a 21% higher prevalence of desiring a different body image from the current one.

Among the adolescents with excessive abdominal fat, 90.9% were dissatisfied with their body image. For those who classified their nutritional status as overweight or underweight, the prevalence of the outcome was 30% higher. Adolescents dissatisfied with their body image reported a higher body interference in activities and personal relationships, as well as a higher chance of attempting to lose body weight. The prevalence of indicators of CMDs was 32% higher among adolescents dissatisfied with their body image (Table 2).

After adjusted analysis the factors found to be associated with body dissatisfaction were: lower maternal schooling, excessive abdominal fat, the perception of nutritional status as above or below normal weight, the interference of physical shape in activities and personal relationships. The presence of a positive score indicating CMDs remained associated with body dissatisfaction only at the level of 6.6%, thus above the significance threshold (Table 2).

Table 3 displays the items from the SRQ questionnaire and their association with body dissatisfaction. It was observed that most items included in the SRQ were associated with the outcome. After adjusted analysis, the following

items from the questionnaire remained associated with a higher prevalence of body dissatisfaction: difficulty in performing activities with satisfaction, incapacity of playing a useful role in life, facility in getting scared, and more frequent crying.

## Discussion

Body image consists of an idealization defined by the perceptions and attitudes of people towards their body. The initial concerns with the body become stronger, and experiences help to shape body image and the respective satisfaction. Certain psychological traits, together with dissatisfaction with body image, are considered risk factors for the development of eating and mental psychopathologies<sup>(15)</sup>.

Some authors pointed out that the prevalence of body dissatisfaction is very high, being more common among girls<sup>(16,17)</sup>. In the present study, approximately three-quarters (74.3%) of adolescents were dissatisfied with their body image. However, there was no difference between the genders (75.7 versus 71.6% for girls and boys, respectively). A survey conducted in two municipalities from the state of Rio Grande do Sul, Brazil, with schoolchildren from the 3<sup>rd</sup> and 4<sup>th</sup> grades of elementary school, using the same method as that of the present study to identify body dissatisfaction, also reported a high prevalence of body dissatisfaction (63.9%),

with a small difference between the genders, since almost all girls would prefer to be thinner, whereas boys desired a larger body<sup>(18)</sup>. An opposite result was found in a review of international research, in which authors identified prevalences of body dissatisfaction ranging from 60 to 80% among girls and from 20 to 40% among boys<sup>(19)</sup>.

On the other hand, a study conducted with 1,442 adolescents from 5<sup>th</sup> to 8<sup>th</sup> grade of a public school in Gravataí, state of Rio Grande do Sul, Brazil, found that the majority (75.1%) of them was not concerned with their body image, most of whom were eutrophic (69.2%). However, overweight and obese students showed greater concern with their image than eutrophic and low weight students<sup>(20)</sup>. This result was similar to that of the present survey, which found that 84.6% of overweight adolescents were dissatisfied with their body image and that, among the respondents with abdominal obesity, the prevalence of body dissatisfaction was 90.9%. It should be highlighted that even those adolescents who were not overweight or did not have excessive fat mass in the waist region were dissatisfied with their current body image (72 and 71.1%, respectively). In a study with children aged 8 to 11 years from Porto Alegre, state of Rio Grande do Sul, Brazil, 25.9% of children with adequate BMI considered themselves fat and were dissatisfied with their body image<sup>(21)</sup>.

According to Nunes *et al.*<sup>(22)</sup>, the fact that there are people who considers themselves fat when they are not implies a cognitive distortion that may be explained by a belief imposed to a group by psychosocial and cultural pressure. This level includes the media, and television is one of the main sources of information about the world and establishing standards on esthetic patterns associated with youth and beauty. Advertisements, television shows, and reports strongly influence adolescents' emotional development, becoming important sources of information about sex, drugs, violence and body image for youngsters<sup>(23)</sup>.

Pinheiro *et al.*<sup>(21)</sup> analyzed the characteristics associated with the perception of feeling fat in children aged 8 to 11 years and observed that those with adequate weight and low self-esteem had a twice higher chance of feeling themselves fat when compared with children who had higher self-esteem (PR 2.08; 95%CI 1.17–3.68). Other studies reported that lower levels of body dissatisfaction make children show a lower personal value and low self-esteem, usually becoming dissatisfied with other aspects of life<sup>(24,25)</sup>.

In the study population, it was observed that the adolescents whose mothers had a lower schooling showed a higher prevalence of body dissatisfaction. Triches *et al.*<sup>(18)</sup> also

identified an association between lower maternal schooling and body dissatisfaction. These results restated the importance of education, especially maternal education, which is demonstrated by the higher occurrence of overweight and obesity in schoolchildren whose mothers had a lower educational level, suggesting that mothers' education is a risk factor for obesity among their children. Additionally, it can also be observed the significant positive impact that the greater access to quality information by parents may have on the prevention of overweight and thus on body dissatisfaction in adolescents<sup>(26)</sup>.

Body dissatisfaction is related to low self-esteem and limitations in psychosocial performance, being associated with depressive manifestations. These factors have been associated with adverse consequences, including higher frequency of CMDs<sup>(22)</sup>. Among the adolescents assessed, 28.0% were identified as likely to develop psychological diseases, classified as indicative of CMDs. The prevalence of body dissatisfaction was higher among those positive for CMDs, although the statistical significance value was slightly above the critical threshold of 5% (0.066). Pinheiro *et al.*<sup>(27)</sup> identified a similar prevalence of CMDs (28.8%) in adolescents aged 15–18 years in the urban area of Pelotas, state of Rio Grande do Sul, Brazil. This variable was associated with maternal schooling, and adolescents whose mothers had between five and eight years of schooling showed a prevalence of CMDs 1.42 times higher than those whose mothers had more than eight years of schooling (95%CI 1.01–1.51). In another study with high school students, Rocha *et al.*<sup>(28)</sup> identified a prevalence of CMDs of 45.7%, approximately twice as more frequent among females (59.3 *versus* 28.4% for males).

The manifestation of depression in adolescents has features typical of the disorder in this stage of life. Bahls states that depressed adolescents are not always sad; they exhibit an irritable and unstable behavior, with the possible occurrence of explosive and anger outbursts<sup>(29)</sup>. According to Kazdin *et al.*<sup>(30)</sup>, more than 80% of depressed adolescents present with irritation, reduced energy, apathy and lack of interest, psychomotor retardation, hopelessness and guilt, sleep disturbances, difficulty in concentrating, appetite and weight changes, isolation. The symptoms more reported by the adolescents analyzed include loss of satisfaction with activities, crying, facility in getting scared, difficulty in making decisions, difficulties at school, sense of uselessness, loss of interest in things, among others. In adolescence depression becomes common due to the changes occurring in this phase, but it may involve a high degree of morbidity and mortality,



especially related to suicide. Most depressed children and adolescents are not diagnosed nor referred to treatment<sup>(29)</sup>.

Because the present study had a cross-sectional design, it was not possible to specify whether the observed associations represented causes or effects of body dissatisfaction. In other words, it was not possible to determine if adolescents became more depressed because they were dissatisfied with their body image or if depression caused body dissatisfaction. Moreover, other ways of assessing body dissatisfaction were used in different studies by different questionnaires on silhouette and perception of body image.

It can be concluded that the adolescents under study showed a high prevalence of body dissatisfaction, with no differences between the genders. Adolescents whose mothers

had lower schooling, those with excessive abdominal fat and negative self-perception of nutritional status, and those who reported interference of the body in daily physical activities and relationships showed higher prevalences of body dissatisfaction. The adolescents presenting scores indicative of CMDs showed a higher prevalence of the outcome; however, after adjusted analysis, their association with the outcome was statistically borderline, being observed only at the level of 6.6%. Thereby, the assessment of depressive state in adolescents and its related factors are especially important to provide support to actions for promoting a healthy lifestyle and the interdisciplinarity between professionals, with the purpose of promoting joint works to improve the quality of life of the adolescents assessed.

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