



PERCEPTION OF BODY IMAGE ASSOCIATED WITH THE NUTRITIONAL STATUS OF CHILDREN AND ADOLESCENTS

Percepção da imagem corporal associada ao estado nutricional de crianças e adolescentes

Percepción de la imagen corporal asociada con el estado nutricional de niños y adolescentes

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ABSTRACT

Objective: To analyze the association between the parents' perception of their children's body image and the self-perceived body image of children and adolescents in relation to their nutritional status. **Methods:** Cross-sectional study conducted between March and April 2016 with 122 children and adolescents aged 6 to 19 years and their guardians. With the students, a questionnaire with data addressing gender, weight, height and school location (rural or urban) was applied, in addition to the Stunkard's Figure Rating Scale (1983) for evaluation of the self-perceived body image. The nutritional status was calculated by means of the Body Mass Index and classified according to the World Health Organization (WHO) 2007 cut-off points. With the parents or guardians, the Stunkard's Figure Rating Scale (1983) and a closed question addressing the concern about their children's nutritional status were used, besides the identification of gender, age and degree of kinship (parents, grandparents, uncles, brother or other family member). Data was analyzed using Fisher's test and $p \leq 0.05$. **Results:** It was found that the parent's perception of their children's body image was significantly associated with their children's self-perceived body image ($p \leq 0.001$), and the students' self-perceived body image was also associated with their nutritional status ($p \leq 0.001$). **Conclusion:** There was a positive association between the parent's perception of their children's body image and between the self-perceived body image of children and adolescents and their nutritional status.

Descriptors: Body Image; Nutritional Status; Child; Adolescent.

RESUMO

Objetivo: Analisar a relação entre a percepção dos pais quanto à imagem corporal de seus filhos e a autopercepção da imagem corporal das crianças e dos adolescentes em relação ao seu estado nutricional. **Métodos:** Estudo de caráter transversal, realizado entre março e abril de 2016 com 122 crianças e adolescentes, de 6 a 19 anos, e com os seus responsáveis. Com os escolares, foi aplicado um questionário contendo dados relativos ao gênero, peso, altura e à localização da área da escola (rural ou urbana), além da escala de silhuetas de Stunkard para avaliação da autopercepção da imagem corporal. Calcula-se o estado nutricional pelo índice de massa corporal (IMC) classificando-o de acordo com os pontos de corte da Organização Mundial da Saúde (OMS) 2007. Com os pais ou responsáveis, utilizou-se a escala de silhuetas de Stunkard e uma questão fechada sobre a preocupação com o estado nutricional da criança ou adolescente, além da identificação do gênero, idade e grau de parentesco (pais, avós, tios, irmão ou outro familiar). Dados analisados com teste de Fisher e $p \leq 0,05$. **Resultados:** Verificou-se que a percepção da imagem corporal dos pais esteve significativamente associada à autopercepção da imagem corporal de seus filhos ($p \leq 0,001$), bem como a autopercepção da imagem corporal dos escolares esteve associada ao seu estado nutricional ($p \leq 0,001$). **Conclusão:** Houve uma associação positiva entre a percepção dos pais em relação à imagem corporal de seus filhos e entre a autopercepção da imagem corporal das crianças e dos adolescentes com o seu estado nutricional.

Descritores: Imagem Corporal; Estado Nutricional; Criança; Adolescente.



RESUMEN

Objetivo: Analizar la relación entre la percepción de los padres respecto la imagen corporal de sus hijos y la autopercepción de la imagen corporal de niños y adolescentes sobre su estado nutricional. **Métodos:** Estudio de carácter transversal realizado entre marzo y abril de 2016 con 122 niños y adolescentes entre 6 y 19 años y sus responsables. Se aplicó un cuestionario a los escolares con datos sobre el género, el peso, la altura y la localización del área de la escuela (rural o urbana) además de la escala de siluetas de Stunkard para la evaluación de la autopercepción de la imagen corporal. Se calculó el estado nutricional por el Índice de Masa Corporal (IMC) clasificado según los puntos de corte de la Organización Mundial de la Salud (OMS) de 2007. Se aplicó la escala de siluetas de Stunkard a los padres o responsables y una pregunta cerrada sobre la preocupación del estado nutricional del niño o adolescente, además de la identificación del género, la edad y el vínculo familiar (padres, abuelos, tíos, hermano u otro familiar). Los datos fueron analizados con la prueba de Fisher y $p \leq 0,05$. **Resultados:** Se verificó que la percepción de la imagen corporal de los padres se asoció de modo significativo con la autopercepción de la imagen corporal de sus hijos ($p \leq 0,001$) así como la autopercepción de la imagen corporal de los escolares se asoció con su estado nutricional ($p \leq 0,001$). **Conclusión:** Hubo una asociación positiva entre la percepción de los padres sobre la imagen corporal de sus hijos y entre la autopercepción de la imagen corporal de los niños y de los adolescentes con su estado nutricional.

Descriptor: Imagen Corporal; Estado Nutricional; Niño; Adolescente.

INTRODUCTION

Body image (BI) is a major concern because it influences the construction of an individual's identity and the perception he/she has of his/her own body or of what he/she understands as healthy⁽¹⁾. Children's and adolescents' dissatisfaction with physical fitness becomes more intense over time in such a way that they try to change their appearance as they find it difficult to accept their body⁽²⁾.

In this context, low self-esteem predominates and increases the chances of developing risk behaviors, such as eating disorders (ED)⁽³⁾ and pathologies such as obesity, diabetes mellitus and arterial hypertension⁽²⁾. EDs occur as a consequence of the distorted perception of self-image – normal weight individuals think they are thin and overweight individuals do not think they are in such a condition. EDs are more common in women and during adolescence⁽⁴⁾. Thus, dissatisfaction with BI determines the susceptibility to eating disorders⁽⁵⁾.

Given the high rates of chronic diseases and obesity in this age group, obesity has been considered a global epidemic, especially in developed and industrialized countries^(4,5).

Nutritional disorders and diseases associated with BI may be related to the habits of children and adolescents. This population group usually follows a high-calorie diet and is not encouraged to engage in physical activity; rather, they spend most of their time on technological and electronic devices⁽⁶⁾. In addition, education and income have an influence on the choice of foods. Today, due to practicality, cost and marketing, people tend to prefer soft drinks, processed juices, industrialized salads and fried foods⁽⁵⁾ over healthier foods that should be included in adequate and balanced meals particularly necessary for growth and development in this life cycle⁽⁷⁾.

Common bad eating habits, in qualitative terms, are believed to influence BI perception, which starts in adolescence and is influenced by psychological, emotional, somatic and cognitive issues related to the concern with and the search for a beautiful body and a good body shape – ideals imposed by society⁽⁸⁾. Since an unbalanced diet can have a potential effect on children and adolescents, such as dissatisfaction with the body, the adoption of adequate habits at this phase of life should be a concern of those responsible for these individuals both at home and in the school environment⁽⁹⁾.

Parents' perception of their children's BI should represent constant reflection on this follow-up. However, the reduced time to buy and prepare healthy foods and to perform activities related to health and BI has an impact on the diets of children and adolescents⁽¹⁰⁾.

Given the above, the objective of the present study was to analyze the association between the parents' perception of their children's body image and the self-perceived body image of children and adolescents in relation to their nutritional status.

METHODS

This is a cross-sectional study conducted between March and April 2016 with children and adolescents aged 6 to 19 years of both genders enrolled in public schools of a country town in the state of Rio Grande do Sul. The parents or legal guardians of the children and adolescents were also included in the study. The municipal school system of the country town where this research took place is composed of six primary schools from which 331 students who met the inclusion criteria were selected.

The school principals, the students and their parents or legal guardians were invited to participate in the study. The participants provided their written informed consent after agreeing to participate in the study.

A total of 122 children and adolescents who composed the final sample participated in the study. The other 209 students did not return the informed consent form signed by their parents or legal guardians, which was considered a refusal to participate in the study. Students and parents or legal guardians who were not present at the time of data collection or withdrew from the study for some reason or were unable to undergo the nutritional assessment or to answer the questionnaires or did not provide written informed consent were excluded from the study.

Data were collected from parents or guardians using a structured questionnaire on the perception of nutritional status, which should be described based on the Stunkard scale⁽¹¹⁾. The questionnaire contained a closed-ended question about the concern with the nutritional status of the child. The responses were adapted and categorized into “not at all worried”, “worried” and “very worried”⁽¹²⁾. In addition, gender, age and degree of kinship (parents, grandparents, uncles/aunts, siblings, or other relatives) were assessed.

The Stunkard scale⁽¹¹⁾ included in the questionnaire used to assess parents’ or guardians’ perception of their children’s BI in relation to their nutritional status consisted of figures of boys and girls numbered 1 to 9 presenting silhouettes ranging from thinness to obesity: silhouette 1 – underweight; silhouettes 2 and 3 – normal weight; silhouettes 4 to 6 – overweight; and silhouettes 7 to 9 – obesity. The parents or guardians should place a mark (an “x”) on the figure that best resembled that of their child.

The same scale⁽¹¹⁾ and the same classification criteria were used to assess the self-perception of BI in the children and adolescents. The students underwent anthropometric assessment, which consisted of weight and height measurement for further assessment of the nutritional status.

Weight was measured using a Cadence[®] calibrated digital scale with a capacity of 150 kilograms and a precision of 100 grams. The participants should be barefoot, wear light clothing and stand upright with their feet together on the center of the scale and the arms along the body, as recommended by the Food and Nutrition Surveillance System (*Sistema de Vigilância Alimentar e Nutricional – SISVAN*)⁽¹³⁾.

Height was measured using a measuring tape. The participants should stand upright with the head placed in the Frankfort plane and without ornaments; the arms should be extended along the body and the participants should look straight, as recommended by SISVAN⁽¹³⁾.

The nutritional status was assessed using the body mass index (BMI) calculation, which considers the relationship between weight and height squared ($BMI = \text{Weight in Kg}/\text{Height in m}^2$). The BMI was classified according to the cut-off points established by the World Health Organization (WHO)⁽¹⁴⁾ for age group and gender. To optimize the assessment of the students’ nutritional status, the BMI classification was grouped into thinness ($< 3^{\text{rd}}$ Percentile); normal weight ($\geq 3^{\text{rd}}$ Percentile and $\leq 85^{\text{th}}$ Percentile); overweight ($> 85^{\text{th}}$ Percentile and $\leq 97^{\text{th}}$ Percentile); and obesity ($> 97^{\text{th}}$ Percentile).

Data were analyzed using tables, descriptive statistics and the Fisher’s Exact Test with a maximum significance level of 5% ($p \leq 0.05$). The Statistical Package for the Social Sciences (SPSS), version 13.0, was used for statistical analysis.

The present study was approved by the Research Ethics Committee of the Univates University Center (*Centro Universitário Univates*), with Approval No. 612.030.

RESULTS

The students’ mean age was 10.32 ± 2.39 years. There was a predominance of: children – 63.1% ($n=77$); age 8 – 17.2% ($n=21$); and girls – 65.6% ($n=80$). Regarding school location, 52.5% ($n=64$) of the students were enrolled in schools located in the urban area of the municipality. As for the BMI classification, 73.0% ($n=89$) of the students were at normal weight, with a mean BMI of 18.16 ± 3.63 Kg/m². The mean weight and height were 39.48 ± 13.2 Kg and 1.45 ± 0.14 meters, respectively. With regard to the degree of kinship, 95.1% ($n=116$) of those in charge of the students who participated in the study were parents (father or mother) (Table I).

Regarding self-perception of BI assessed through the figure rating scale, 50% ($n=61$) of the students were at normal weight and 37.7% ($n=46$) were overweight. In all, 45.9% ($n=56$) of the parents or legal guardians were “worried” about the nutritional status of their child, while 43.4% ($n=53$) were “not at all worried”. The assessment of the parents’ perception of their children’s BI through the figure rating scale revealed that 49.2% ($n=60$) of the parents thought their children were at normal weight while 36.1% ($n=44$) thought their children were overweight (Table I).

Table I - Characterization of the study population. Rio Grande do Sul, 2016.

Variable	n	%
Gender		
Boys	42	34.4
Girls	80	65.6
Age (years)		
6	5	4.1
7	11	9
8	21	17.2
9	11	9
10	15	12.3
11	14	11.5
12	19	15.6
13	11	9
14	15	12.3
School location		
Urban	64	52.5
Rural	58	47.5
Degree of kinship		
Father/Mother	116	95.1
Grandfather/Grandmother	5	4.1
Uncle/Aunt	1	0.8
BMI - Classification groups		
Thinnes	6	4.9
Normal weight	89	73
Overweight	17	13.9
Obesity	10	8.2
Self-perception – Figure rating scale		
Low weight	15	12.3
Normal weight	61	50
Overweight	34	27.9
Obesity	12	9.8
Parents' or guardians' concern		
Not at all worried	53	43.4
Worried	56	45.9
Very worried	13	10.7
BI perception		
Low weight	18	14.8
Normal weight	60	49.2
Overweight	34	27.9
Obesity	10	8.2

BMI: Body Mass Index. BI: Body Image.

The parents' perception of their children's BI presented a significant agreement with the classification of their child's nutritional status in all the BMI groups ($p \leq 0.001$). Thus, the parents' perception of low weight was associated with the BMI classified into thinness in 66.7% ($n=4$) of the cases. Perception of normal weight was associated with normal weight classification in 62.9% ($n=56$) of the cases. The perception of overweight was associated with a BMI classified into overweight in 76.5% ($n=13$) of the cases. Finally, the perception of obesity was associated with the BMI classified as obesity in 60.0% ($n=6$) of the cases (Table II).

Table II - Parents' perception of their children's body image in relation to their nutritional status by body mass index (BMI) classification groups. Rio Grande do Sul, 2016.

Variable	Response	BMI classification groups							
		Thinness		Normal weight		Overweight		Obesity	
		n	%	n	%	n	%	n	%
Parents' perception of children's BI based on the figure rating scale	Low weight	4*	66.7*	13	14.6	1	5.9	-	-
	Normal weight	2	33.3	56*	62.9*	2	11.8	-	-
	Overweight	-	-	17	19.1	13*	76.5*	4	40.0
	Obesity	-	-	3	3.4	1	5.9	6*	60.0*

BMI: Body Mass Index; BI: Body Image. Fisher's Exact test. *significance $p \leq 0.05$

The students' self-perception of body image was significantly associated with their nutritional status ($p \leq 0.001$). The self-perception of normal weight was associated with the normal weight classification in 61.8% ($n=55$) of the cases. The self-perception of overweight was associated with the BMI classified into overweight and obesity in 58.8% ($n=10$) and 60.0% ($n=6$) of the cases, respectively. Self-perceived obesity was associated with the BMI classified into overweight and obesity in 23.5% ($n=4$) and 40.0% ($n=4$) of the cases, respectively ($p \leq 0.001$). Therefore, only self-perceived low weight was not significantly associated with any BMI classification (Table III).

Table III - Students' self-perceived Body Image in relation to their nutritional status by body mass index (BMI) classification groups. Rio Grande do Sul, 2016.

Variable	Response	BMI classification groups							
		Thinness		Normal weight		Overweight		Obesity	
		n	%	n	%	n	%	n	%
BI self-perception based on the figure rating scale	Low weight	1	16.7	13	14.6	1	5.9	-	-
	Normal weight	4	66.7	55	61.8*	2	11.8	-	-
	Overweight	1	16.7	17	19.1	10	58.8*	6	60.0*
	Obesity	-	-	4	4.5	4	23.5*	4	40.0*

BMI: Body Mass Index; BI: Body Image. Fisher's Exact test. *significance $p \leq 0.05$

The parents' perception of their children's BI was significantly associated with their children's self-perceived BI ($p \leq 0.001$), i.e., the parents' perception of low weight was associated with the students' self-perceived low weight in 80.0% ($n=12$) of the cases. The parents' perception of normal weight was associated with the students' self-perceived normal weight in 82.0% ($n=50$) of the cases. The same holds for the parents' perception of overweight and obesity, which was associated with the students' self-perceived overweight and obesity in 58.8% ($n=20$), 66.7% ($n=8$), 17.6% ($n=6$) and 33.3% ($n=4$) of the cases, respectively (Table IV).

Table IV - Parents' perception of their children's BI in relation to their children's self-perceived body image. Rio Grande do Sul, 2016.

Variable	Response	Self-perceived body image							
		Low weight		Normal weight		Overweight		Obesity	
		n	%	n	%	n	%	n	%
Parents' perception of their children's BI based on the figure rating scale	Low weight	12*	80.0*	5	8.2	1	2.9	-	-
	Normal weight	3	20.0	50*	82.0*	7	20.6	-	-
	Overweight	-	-	6	9.8	20*	58.8*	8*	66.7*
	Obesity	-	-	-	-	6*	17.6*	4*	33.3*

BI: Body Image. Fisher's Exact Test. *significance $p \leq 0.05$

The perception of BI and the nutritional status of students were not associated with the school location (Table V).

Table V - Association of parents' perception of their children's body image and BMI classification groups with school location. Rio Grande do Sul, 2016.

Variable	Response	School location				p-value
		Urban		Rural		
		n	%	n	%	
BMI classification group	Thinness	4	6.3	2	3.4	0.813
	Normal weight	45	70.3	44	75.9	
	Overweight	9	14.1	8	13.8	
	Obesity	6	9.4	4	6.9	
Parents' perception of their children's BI	Low weight	8	12.5	10	17.2	0.890
	Normal weight	32	50.0	28	48.3	
	Overweight	18	28.1	16	27.6	
	Obesity	6	9.4	4	6.9	

BMI: Body Mass Index; BI: Body Image. Fisher's Exact Test. *significance $p \leq 0.05$.

DISCUSSION

The results of the present study indicate a positive association of the classification of the nutritional status with children's and adolescents' self-perceived BI and parents' perception of their children's BI. However, health professionals should discuss the relationship between BI and nutritional status with children and adolescents in order to prevent diseases and promote health.

In the present study, the parents' perception of their children's BI agreed with the classification of the nutritional status of their children for all BMI groups. A study⁽¹⁵⁾ on mothers' perception of their children's BI in relation to the nutritional status showed that the mothers pointed out a distorted BI with regard to excess weight, underestimating the nutritional status of their children. The same was also found in another study in which parents also tended to underestimate the nutritional status of their children – the parents did not recognize their children were obese and pointed out a distorted BI of their children⁽¹²⁾. Another study reported that some parents have a distorted perception of their children's BI because they want to see things the way they wanted them to be⁽¹⁶⁾.

In the present study, students' self-perceived BI was associated with the reality of their nutritional status, without any distortions. This finding is in line with the findings of other studies that have reported that most adolescents have a positive perception of BI, without any severe distortions^(8,17).

It should be noted that BI is the illustration of the size, appearance and shape of the body and that emotional responses are associated with the nutritional status and, consequently, with BI satisfaction or dissatisfaction⁽¹⁸⁾. BI can be distorted in childhood and in adolescence as the perception of BI changes over time; such image is that which comes to our minds or that which we often want to have⁽¹⁷⁾.

In the present study, the parents' perception of their children's BI was associated with the students' self-perceived BI. The same was found in a study in which most parents' perceptions of their children's BI (real) were close to the one they wanted them to be⁽¹²⁾. The present study also showed that almost half of the parents or legal guardians were worried about their children's nutritional status and that almost half of the parents or legal guardians were not worried at all. A few parents or legal guardians were very worried. A study carried out in the state of Espírito Santo showed that most mothers reported being worried about their children's current or future weight⁽¹⁹⁾. Another study carried out in the city of São Carlos found a high percentage of parents worried about weight problems related to their teenage children⁽²⁰⁾.

There were no significant associations between the parents' perception of their children's BI and the children's nutritional status and between students' nutritional status and school location. Similar results were found in a study carried out in the municipalities of Vitória and Santa Maria de Jetibá, where the majority of mothers in both urban and rural areas presented perceptions of the nutritional status of their children corresponding to their actual nutritional status⁽¹⁹⁾.

One limitation of this study is the low participation of students – it should be noted that more than half of the eligible students did not show interest in participating in the research. Also, the sexual maturity of the children and adolescents was not assessed. This variable could have been investigated through the application of the Tanner Scale, a tool used for puberty staging, which may be related to the degree of sexual maturation.

CONCLUSION

The present study showed a positive association of the parents' perception of their children's body image and the children's and adolescents' self-perceived body image with their nutritional status. Thus, the results are considered positive as they have shown that the parents' perception was in line with the classification of their children's nutritional status in all the categories of the body mass index.

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