0021-7557/09/85-02/122
Jornal de Pediatria

Eating attitudes and body image in ethnic Japanese and Caucasian adolescent girls in the city of São Paulo, Brazil

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Abstract

Objective: Despite investigations into the rapid increase in eating disorders across diverse ethnic groups, conclusions concerning ethnicity and eating disorders are contradictory. The objective of the present study was to investigate eating attitudes in ethnic Japanese and Caucasian adolescents in Brazil. The influence of body mass index (BMI), menarche and social-affective relationships on the development of eating disorders was also assessed.

Methods: Questionnaires evaluating the incidence of eating disorders and the influence of social-affective relationships were applied to 544 Japanese-Brazilian and Caucasian adolescent girls: 10 to 11-year-old Japanese-Brazilian (n = 122) and Caucasian (n = 176) pre-menarcheal adolescents, and 16 to 17-year-old Japanese-Brazilian (n = 71) and Caucasian (n = 175) post-menarcheal adolescents.

Results: Caucasian girls obtained higher scores on the Eating Attitudes Test (EAT-26), showed greater body image dissatisfaction, dieted more often and had more diet models introduced by their mothers and peers than the Japanese-Brazilian girls.

Conclusion: The Caucasian adolescents overall appeared to be more sensitive to aesthetic and social pressures regarding body image than the Japanese adolescents. The high incidence of EAT-26 scores above 20 in the Caucasian pre-menarcheal group indicates that individual body image concerns are developing at an earlier age. Multiple logistic regression revealed several associations between mother-teen interactions and the development of abnormal eating attitudes.

J Pediatr (Rio J). 2009;85(2):122-128: Japanese-Americans, eating disorders, body image, body mass index, adolescence.

Introduction

There is scant literature information regarding body image in non-white populations, in spite of the rapid increase in eating disorders in various ethnic groups. Some studies show high indices of eating disorders for girls of Caucasian ethnicity.[1-3] In other studies, the levels of body dissatisfaction and eating disorders were higher in other ethnic groups.[4]

The emergence of eating disorders has been associated with the process of westernization that emphasizes the desirability of thinness as a beauty ideal.[5,6] However, some studies[7,8] have not found a relationship between westernization and eating disorders. Other authors have shown that acculturation is a protective factor against eating disorders.[6]

Very little information is available on eating disorders in Brazilian adolescents. One study verified the prevalence of abnormal eating behaviors in a sample of women in Southern Brazil. In that study, clinically significant disturbed eating behavior was revealed in 16.5% of the women with Eating Attitudes Test (EAT) scores above the cutoff point of 21.[9]

The small amount of data concerning eating disorders, body dissatisfaction and their associated risk factors in Brazil

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Financial support: Fundação de Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES).

No conflicts of interest declared concerning the publication of this article.

Suggested citation: Sampei MA, Sigulem DM, Novo NF, Juliano Y, Colugnati FA. Eating attitudes and body image in ethnic Japanese and Caucasian adolescent girls in the city of São Paulo, Brazil. J Pediatr (Rio J). 2009;85(2):122-128.

Manuscript received Aug 13 2008, accepted for publication Jan 28 2009.

doi:10.2223/JPED.1882

warrants further studies which can increase the background knowledge concerning these aspects in relation to Brazilian adolescents. The primary objective of the present study was to verify the influence of ethnicity on the development of eating disorders using the EAT-26 with adolescents of a Japanese descendant and a Caucasian descendant population in Brazil. In addition to the total score on the EAT-26, three factors were studied: factor I - related to dieting behavior; factor II - associated with bulimia and concern about food; and factor III - related to self-control of eating and perception of the pressure from other people to gain weight.

It has been suggested that Japanese-Brazilian adolescents show a high degree of acculturation and, as they live in Brazil, a more liberal country, they have suffered less normative social pressure than the adolescents living in Japan.[10] A high level of acculturation and fewer demands in relation to social norms have been associated with a lower risk for eating disorders. Consequently, our first hypothesis is that Japanese-origin adolescents have lower levels of body image dissatisfaction and eating disorders than their Caucasian-origin peers.

Ethnicity, as well as other factors, such as adolescence itself[11] and body mass index (BMI),[1,12,13] have been demonstrated to have an influence upon eating disorders. During the growth period, older adolescents are more concerned with their appearance, weight and peer opinion than younger adolescents. As their body weight increases, there is a corresponding rise in the level of dissatisfaction with their body image.[1] To that end, our second objective was to analyze the effect of BMI and adolescence on the development of eating disorders and body image concerns. The hypothesis for this objective is that post-menarcheal adolescents show higher levels of body image dissatisfaction and eating disorders.

Studies have demonstrated the influence of mothers, fathers and peers on body image and eating disorders.[4,14-16] Our third objective was to analyze family and social-affective relationships in relation to adolescent eating behaviors within the two ethnic groups. Mothers play an important role in transmitting the nature and importance of women's sociocultural pressures to their daughters, by transmitting their own concerns with body weight and the aesthetic concept of thinness.[15] It has been suggested that Caucasian mothers show greater concern with their own body image than Japanese-Brazilian mothers as they belong to the ethnic group at highest risk for developing eating disorders.[1-3] To that end, our third hypothesis is that Caucasian mothers will have greater influence on the development of their daughters' disordered eating attitudes since they are more likely to transmit their own weight concerns to their daughters than their Japanese counterparts.

Methods

The study was approved by the Research Ethics Committee of Universidade Federal de São Paulo and followed the ethical standards and regulations for studies involving human beings established by the Brazilian Ministry of Health.

This cross-sectional study is part of a broader study[17] which evaluated anthropometry, body composition and various aspects concerning eating disorders and physical activities in adolescents at private schools in the city of São Paulo, Brazil.

The anthropometric measurements, body composition and questionnaire information concerning body image, eating disorders and physical activities were collected from pre-menarcheal adolescents aged 10 to 11 years and from post-menarcheal adolescents aged 16 to 17 years. Out of a total of 725 adolescents evaluated, 550 were included in the study based on the following inclusion criteria: 1 - Japanese descendants with three or all four grandparents born in Japan; 2 - adolescents of Caucasian descent with no African, Asian or other ethnic origins; 3 - healthy individuals; 4 - non-habitual alcohol drinkers. This restriction on alcohol consumption occurred for two reasons: (1) influence of alcohol on the body composition measurements of the adolescents in the original study; (2) the possible role of alcohol as a confounding factor in the associations involving psychosocial variables.

Of the 550 adolescents selected, 6 failed to hand in their EAT-26, resulting in a total sample of 544 adolescents: 10 to 11-year-old Japanese descendants (n = 122) and Caucasian descendants (n = 176), and 16 to 17-year-old Japanese descendants (n = 71) and Caucasian descendants (n = 175).

BMI was obtained as a result of the weight (kg) divided by the square of the height (m). The cutoff point for thinness was set at the 5th percentile of the BMI reference population distribution from the National Center for Health Statistics (NCHS), and the cutoff point for overweight and obesity was set at the 85th percentile. The anthropometric characteristics of the adolescents are presented in Table 1.

A major concern in our study was to have distinct groups in relation to menarche. Therefore, two groups were adopted: one at the beginning of sexual development and the other at the end of this process.

The EAT-26 has proven to be a useful tool in the detection of clinical cases in populations at high risk for this disorder and identification of individuals with abnormal concerns about food and weight. The EAT-26 has a six-point Likert-type scale.[18] A score ≥ 20 is indicative of eating disorder. Three EAT-26 factors were identified from a factor analysis.[19] The first factor (I) is related to dieting behavior, avoidance of fatty foods and the desire to be thinner; the second factor (II) is related to bulimia and concern about food; and the third factor (III) is related to self-control of eating and perception of the pressure from other people to gain weight. The Brazilian version of the EAT-26 was validated in a sample of 163 women in Southern Brazil, in which a cutoff score of 21 was found to have a positive predictive value of 14%.[19] Despite the existence of this version, we used our own version of the test, which did not differ as to content and structure from the original and

Table 1 - Anthropometric measurements and results on the Eating Attitudes Test of Japanese and Caucasian female adolescents (mean ± SD)

Anthropometric measurements and EAT-26 results	Pre-menarcheal adolescents		Post-menarcheal adolescents	
	Japanese (n = 122)	Caucasian (n = 176)	Japanese (n = 71)	Caucasian (n = 175)
Weight (kg)	37.8±7.6*‡	41.1±10.2†	53.7±7.8†	57.9±8.6
Height (cm)	143.4±5.6*‡	146.8±7.5†	158.1±4.5†	162.9±6.0
BMI (kg/m^2)	18.3±3.1‡	18.9±3.4†	21.5±2.8	21.8±2.9
EAT-26 (total)	8.4 ±6.7*	14.5±9.5†	9.4±6.8	11.9±9.3
Dieting scale (factor I)	5.9±4.7*	9.5±6.6	7.1±6.1	8.8±7.3
Bulimia and food preoccupation scale (factor II)	0.5±1.3*	1.2±2.2	0.7±1.4	1.2±2.6
Oral control scale (factor III)	2.1±2.9*	3.8±3.7†	1.6±1.9	2.0±2.5

BMI = body mass index; EAT = Eating Attitudes Test; SD = standard deviation.
Results of the Mann-Whitney test (z), critical z = 1.96. Significant p values at the 0.05 level.
* Significantly different from Caucasian pre-menarcheal adolescents.
† Significantly different from Caucasian post-menarcheal adolescents.
‡ Significantly different from Japanese post-menarcheal adolescents.

the Brazilian versions. Our version was used to facilitate understanding by the adolescents.

The alpha reliability coefficient was computed to obtain a measurement of internal consistency ($\alpha = 0.79$).

The questionnaire on body image was adapted from the original questionnaire by Moore.[20] Questions were related to body image and behavior toward weight loss, e.g. dieting, fasting and use of diet pills. The questionnaire included yes/no questions and multiple-choice questions on a 3 to 5-point Likert-type scale. Examples of questions are: "Are you satisfied with your body weight?", "Do you eat compulsively?"

Social and family influence on the development of disordered eating behaviors was analyzed by comparing the questionnaire responses concerning family and social-affective relationships with the EAT-26 scores. This questionnaire was adapted by Mukai et al.[4] from the original questionnaire by Maloney et al.[21] The perception of the adolescents' nutritional status and/or behavior toward weight loss by family members and friends, from the adolescent's point of view, was verified using this questionnaire.

The questionnaires by Moore[20] and Mukai et al.[4] are descriptive questionnaires which do not produce scores. Therefore, they are not psychometric tests that complicate the process of validation. Just as the EAT-26, the structure and content of these questionnaires were kept in our version, except for the elimination of questions that were similar to those of previous questionnaires. Moreover, these questionnaires were translated by three different translators, with no differences in interpretation among them. In Brazil, the western model of beauty is emphasized in the same way as in the countries (the United States and England) where these questionnaires were developed. Therefore, no major cultural differences should hinder interpretation of the psychosocial attitudes in this study.

The Mann-Whitney test was used for the non-parametric independent variables: total values and the questionnaire's factors on EAT-26. The chi-square test for 2 x 2 and 2 x n tables was used to analyze the EAT-26 scores as a nutritional status function. The partition of the chi-square test was used when significance was detected in an association of the 2 x n tables. For all tests, the level of statistical significance was set at 5% ($p \leq 0.05$).

Multiple logistic regression analysis evaluated family and social-affective influences as risk factors for the development of tendencies toward disordered eating behaviors. The dichotomic dependent variable was EAT-26 ≥ 20 and EAT-26 < 20. The logistic regression results were expressed as odds ratio. The confidence interval was 95%.

Results

For the Caucasian pre-menarcheal adolescents both the EAT-26 total and partial mean factors were statistically higher than those for the Japanese-Brazilian adolescents. The Caucasian pre-menarcheal adolescents presented an EAT-26 total value and a factor III value statistically greater than that of post-menarcheal adolescents (Table 1).

Although the results in Table 1 showed no statistical difference between Japanese-Brazilian pre- and post-menarcheal adolescents, the EAT-26 scores showed significant values for the post-menarcheal adolescents (Table 2).

Table 2 - Frequency of scores ≥ 20 on the EAT-26

Results on the EAT-26	Japanese, n (%)	Caucasian, n (%)	Chi-square test (3.84)
Pre-menarcheal adolescents	6 (4.9)*†	47 (26.7)	23.39 (p = 0.00)
Post-menarcheal adolescents	9 (12.7)	34 (19.4)	1.60 (p = 0.21)
Chi-square test	3.77 (p = 0.05)	2.62 (p = 0.11)	-

EAT = Eating Attitudes Test.
Significant p values at the 0.05 level.
* Significantly different from Caucasian pre-menarcheal adolescents.
† Significantly different from Japanese post-menarcheal adolescents.

The Caucasian pre-menarcheal adolescents exhibited a frequency significantly higher than EAT-26 ≥ 20 in comparison with their Japanese-Brazilian peers.

The Japanese-Brazilian pre- and post-menarcheal adolescents did not exhibit any statistically significant differences on their EAT-26 scores within the category of nutritional status. Nevertheless, for the Caucasian adolescents, BMI played a preponderant role. In the Caucasian pre-menarcheal adolescents, a statistically greater frequency, with values of EAT-26 ≥ 20, was observed for obese adolescents (57.1%), in comparison with eutrophic (25.4%), overweight (25.0%) and undernourished (0.0%) adolescents (partition of chi-square = 7.20, p = 0.01). Obese and eutrophic Caucasian adolescents presented a frequency of EAT-26 ≥ 20 significantly greater than the obese and eutrophic Japanese-Brazilian pre-menarcheal adolescents, the results being, respectively: obese: 57.1 vs. 0.0%, Fisher's test, p = 0.01; and eutrophic: 25.4 vs. 5.2%, chi-square = 15.99, p = 0.00.

In the Caucasian post-menarcheal group, those adolescents who were overweight obtained a frequency higher than EAT-26 ≥ 20, which was higher than that observed in the other nutritional groups (overweight: 58.3%; obese: 20.0%; eutrophic and underweight: 16.5%, chi-square = 12.50, p = 0.002). A significantly greater frequency of EAT-26 ≥ 20 scores was verified for the overweight adolescents in the Caucasian group when compared to the Japanese-Brazilian group (58.3 vs. 0.0%, Fisher's test, p = 0.01).

The Caucasian pre-menarcheal girls presented statistically higher values of body image dissatisfaction than the Japanese-Brazilians (54.0 vs. 40.2%, chi-square = 5.51, p = 0.02). Post-menarcheal adolescents in both ethnic groups demonstrated higher frequencies than the pre-menarcheal adolescents (Japanese-Brazilian: 66.2 vs. 40.2%, chi-square = 12.17, p = 0.001; and Caucasian: 70.3 vs. 54.0%, chi-square = 61.66, p = 0.00).

Dieting frequency in the Caucasian pre-menarcheal adolescents was statistically higher than that of their Japanese-Brazilian peers (22.2 vs. 8.2%, chi-square = 10.22, p = 0.001).

Japanese-Brazilian post-menarcheal adolescents dieted more frequently than the pre-menarcheal adolescents (23.9 vs. 8.2%, chi-square = 9.25, p = 0.00). Between Caucasian pre- and post-menarcheal adolescents, no statistically significant differences were observed. Caucasian pre- and post-menarcheal adolescents had more models for dieting behavior, introduced by their mothers, than the Japanese-Brazilian pre- and post-menarcheal adolescents (pre-menarcheal adolescents: 33.5 vs. 22.1%, chi-square = 4.55, p = 0.03; and post-menarcheal adolescents: 27.4 vs. 12.7%, chi-square = 6.17, p = 0.01). Friends of the Caucasian pre-menarcheal adolescents also dieted more often than the friends of the Japanese-Brazilian pre-menarcheal adolescents (53.4 vs. 36.9%, chi-square = 7.90, p = 0.00).

"Gaining 1 kilo in body weight, which caused serious concern" was the variable exhibiting the highest risk. Caucasian adolescents showed a higher risk of having EAT-26 ≥ 20 scores than the Japanese-Brazilian adolescents. Adolescents who "always or frequently talk about food and/or diet with their mothers" showed a higher risk of having abnormal eating attitudes than those who "talked sometimes or rarely about the issue." These variables were adjusted to control for confounding factors in the multiple logistic regression analysis (Table 3).

In the multiple logistic regression analysis, nutritional status was not mentioned because the relationship between nutritional status and eating attitude was widely discussed with the use of the chi-square test. The analysis of the odds ratio in nutritional status function was suppressed to avoid duplicate similar conclusions.

Discussion

The differences found between the two ethnic groups under study are in accordance with previous studies, which reported higher indices of body image dissatisfaction and eating disorders in white women.[1-3] The Caucasian adolescents, mainly the pre-menarcheal adolescents, presented higher levels of tendency toward eating disorders. Caucasian adolescents appear to be more sensitive to cultural and aesthetic pressures than their Japanese-Brazilian peers.

Table 3 - Multiple logistic regression model of the variables involving family and social-affective influence, as predictors of developing abnormal eating attitudes. Crude and adjusted odds ratio and 95% confidence intervals

	Crude OR			Adjusted OR		
EAT-26 ≥ 20	**OR**	**SE**	**95%CI**	**OR**	**SE**	**95%CI**
Ethnicity (Caucasian)	3.56*	0.29	2.0-6.7	2.43*	0.79	1.3-4.6
Frequently talks with mother about dieting to weight loss	5.73*	0.24	3.4-9.5	1.99*	0.60	1.1-3.6
Always concerned about weight as she is overweight	4.69*	0.25	2.8-8.0	1.93*	0.59	1.1-3.5
Extremely or very affected about gaining an extra kilo in body weight	6.17*	0.24	3.7-10.2	3.54*	1.02	2.0-6.2
Always or frequently talks with mother about food	3.6*	0.23	2.2-5.8	1.94*	0.55	1.1-3.4

95%CI = 95% confidence intervals; EAT = Eating Attitudes Test; OR = odds ratio; SE = standard error.
* Significant p values at the 0.05 level.

The etiology of eating disorders has been associated with thinness as a beauty ideal for women in Western societies; however, the acculturation process may modify this pathway for non-Caucasian women.[5] Some authors have demonstrated that acculturated women presented lower levels of eating disorders than women from a more traditional background.[22] These results indicate that individuals who express a strong national identity abroad are at higher risk of developing eating disorders due to difficulties in growing up with two sets of cultural values. The majority of the Japanese-Brazilian adolescents under study were the third or fourth generation born outside Japan, possibly indicating that these young girls had already taken on the values of the Brazilian community. Therefore, it could be argued that the low level of tendency toward eating disorders in this group is related to their strong acculturation.

The results found by Mukai et al.[4] in a sample of Japanese students demonstrated mean values much higher than those found for the Caucasian and Japanese-Brazilian post-menarcheal adolescents of the present study. According to those authors, although the Japanese society shares aesthetic standards of thinness with the Western society, this "anorexic" ideal to the Japanese women is not necessarily the result of Western influence, but a Japanese tradition. Japan is a country that adheres to very rigid principles, submitting its inhabitants to a continuous search for social approval. This need for social approval has been related to an increase in eating disorders in Japan.

It is possible that the Japanese-Brazilians, away from their ancestral country, have suffered less pressure concerning their body image, considering that Brazil shows greater flexibility in relation to social norms, which could be reflected in lower scores on the EAT-26. On the other hand, Brazil is a country where aesthetic valuation is highly emphasized, building for these Japanese-Brazilian adolescents an environment favorable to the development of eating disorders.

Other studies concerning eating disorders and body image in Japan have shown results different from those by Mukai et al.[4] Studies have shown that the rate of eating disorders in Japan was lower than or similar to that in Western countries.[3,12]

Another explanation for the high EAT-26 scores is that the Japanese-Brazilian pre-menarcheal adolescents were statistically thinner than the Caucasian adolescents at the same age. This result was verified in the original study.[17] The greater dissatisfaction with body weight in Caucasian adolescents would reflect possible eating disorders.[13,14]

The Caucasian pre-menarcheal adolescents presented EAT-26 scores much higher than the Caucasian post-menarcheal adolescents. This fact contradicts our first

hypothesis, since higher levels of eating disorders have been verified mainly in older adolescents.

In the present study, nutritional status appears not to influence the development of eating disorders in Japanese-Brazilians. This result is in accordance with the study by Mukai et al.,[10] which verified that eating disorders were related to social approval, regardless of BMI.

On the other hand, for the Caucasian adolescents, nutritional status influenced EAT-26 scores to a considerable degree. Other authors have reported BMI function as a confounding factor in ethnic relationships and eating disorders.[13]

The higher frequency of dieting among Caucasians could be related to diet models, introduced by mothers and friends, which were more frequent among these adolescents.

The present study revealed several associations involving mother-teen interactions and the development of eating disorders. This result confirms our third hypothesis.

Strength of the present study, in relation to other similar studies, is the well-defined Japanese-Brazilian group. Additionally, in the present study, all adolescents came from middle and upper socioeconomic classes, thus the ethnic groups composing this sample were under similar conditions for the full development of their genetic potential.

The marked differences between the Japanese- and Caucasian-origin adolescents in the present study suggest that further investigations considering ethnicity should be conducted in order to provide valuable information to current research lines and health promotion programs.

Acknowledgements

The authors would like to thank the directors, assistants, teachers and participating students of the following schools in São Paulo for their collaboration: Anglo-Latino, Mater et Magistra, Itamaraty, Roberto Norio, São José, Pioneiro, Ursa Maior, Anglo-Brasileiro, Brasília, Radial, Oshiman, Montessori, Bilac, Renovação, Madre Cabrini, Shohaku, and the Caramuru and Hongwanji scout groups. We are also grateful for the financial support provided by Fundação de Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES).

References

1. Yates A, Edman J, Aruguete M. Ethnic differences in BMI and body/self-dissatisfaction among Whites, Asian subgroups, Pacific Islander, and African-Americans. J Adolesc Health. 2004;34:300-7.
2. Nicdao EG, Hong S, Takeuchi DT. Prevalence and correlates of eating disorders among Asian Americans: results from the National Latino and Asian American Study. Int J Eat Disord. 2007;40:S22-6.
3. Nakamura K, Yamamoto M, Yamazaki O, Kawashima Y, Muto K, Someya T, et al. Prevalence of anorexia nervosa and bulimia nervosa in a geographically defined area in Japan. Int J Eat Disord. 2000;28:173-80.
4. Mukai T, Crago M, Shisslak CM. Eating attitudes and weight preoccupation among female high school students in Japan. J Child Psychol Psychiatry. 1994;35:677-88.
5. Humphry TA, Ricciardelli LA. The development of eating pathology in Chinese-Australian women: acculturation versus culture clash. Int J Eat Disord. 2004;35:579-88.
6. Reddy SD, Crowther JH. Teasing, acculturation, and cultural conflict: psychosocial correlates of body image and eating attitudes among South Asian women. Cultur Divers Ethnic Minor Psychol. 2007;13:45-53.
7. Lee S. Engaging culture: an overdue task for eating disorders research. Cult Med Psychiatry. 2004;28:617-21.
8. Jennings PS, Forbes D, McDermott B, Juniper S, Hulse G. Acculturation and eating disorders in Asian and Caucasian Australian adolescent girls. Psychiatry Clin Neurosci. 2005;59:56-61.
9. Nunes MA, Barros FC, Anselmo Olinto MT, Camey S, Mari JD. Prevalence of abnormal eating behaviour and inappropriate methods of weight control in young women from Brazil: a population based study. Eat Weight Disord. 2003;8:100-6.
10. Mukai T, Kambara A, Sasaki Y. Body dissatisfaction, need for social approval, and eating disturbances among Japanese and American college women. Sex Roles.1998; 39:751-64.
11. Hermes SF, Keel PK. The influence of puberty and ethnicity on awareness and internalization of the thin ideal. Int J Eat Disord. 2002;33:465-7.
12. Nishizawa Y, Kida K, Nishizawa K, Hashiba S, Saito K, Mita R. Perception of self-physique and eating behavior of high school students in Japan. Psychiatry Clin Neurosci. 2003;57:189-96.
13. Arriaza CA, Mann T. Ethnic differences in eating disorder symptons among college students: the confounding role of body mass index. J Am Coll Health. 2001;49:309-15.
14. Yanez AM, Peix MA, Atserias N, Arnau A, Brug J. Association of eating attitudes between teenage girls and their parents. Int J Soc Psychiatry. 2007;53:507-13.
15. Cooley E, Toray T, Wang MC, Valdez NN. Maternal effects on daughters' eating pathology and body image. Eat Behav. 2008;9:52-61.
16. Field AE, Javaras KM, Aneja P, Kitos N, Camargo CA Jr, Taylor CB, et al. Family, peer, and media predictors of becoming eating disordered. Arch Pediatr Adolesc Med. 2008;162:574-9.
17. Sampei MA, Novo NF, Juliano Y, Colugnati FAB, Sigulem DM. Anthropometry and body composition in ethnic Japanese and Caucasian adolescent girls: considerations on ethnicity and menarche. Int J Obes Relat Metab Disord. 2003;27:1114-20.
18. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The eating attitudes test: psychometric features and clinical correlates. Psychol Med. 1982;12:871-8.
19. Nunes MA, Camey S, Olinto MT, Mari JJ. The validity and 4-year test-retest reliability of the Brazilian version of the Eating Attitudes Test-26. Braz Med Biol Res. 2005;38:1655-62.
20. Moore DC. Body image and eating behaviour in adolescent girls. Am J Dis Child. 1988;142:1114-8.

21. Maloney MJ, McGuire J, Daniels SR, Specker B. Dieting behaviour and eating attitudes in children. Pediatrics. 1989;84: 482-9.

22. Tsai G, Curbow B, Heinberg L. Sociocultural and developmental influences on body dissatisfaction and disordered eating attitudes and behaviors of Asian women. J Nerv Ment Dis. 2003;191: 309-18.

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