



Correlates of Body Dissatisfaction in Children

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Objective To assess body dissatisfaction among children between 9 and 14 years of age and to examine factors (age, sex, body mass index, perceived shape, and self-esteem) associated with wanting a thinner or a larger shape.

Study design Through at-school questionnaires, 1515 preadolescent children (51.2% girls) were asked to fill out the Culture Free Self-Esteem Inventory and the Contour Drawing Rating Scale (body dissatisfaction). Trained assessors then weighed and measured the students individually.

Results Overall, 50.5% of girls wanted a thinner shape compared with 35.9% of boys. More boys wanted a larger shape compared with girls (21.1% vs 7.2%). Most of the preadolescents who were overweight or obese were unsatisfied whereas 58.0% of girls and 41.6% of boys who were underweight were satisfied with their body. Results of a multinomial logistic regression revealed that age, sex, body mass index, perceived shape, and self-esteem were significant correlates of the 4 body dissatisfaction contrasts (wanting a slightly thinner, much thinner, slightly larger, and much larger shape) and explained 50% of the variance. An interaction between sex and perceived shape was found, revealing that girls who perceived themselves as having a larger shape were more likely to desire a thinner shape than boys.

Conclusions The high prevalence rate of body dissatisfaction among children suggests that current approaches in our society to prevent problems related to body image must be improved. The different results between girls and boys highlight the need to take into account sex differences when designing prevention programs that aim to decrease body dissatisfaction. (*J Pediatr* 2016;171:202-7).

An increasing number of studies show that body dissatisfaction begins in childhood. Based on the discrepancy between the perceived body shape and the ideal one, the prevalence of body dissatisfaction varies markedly among children and preadolescents. The desire of a thinner body shape ranges from 28%-55% among girls, and from 17%-47% among boys. In contrast, the desire of a larger body shape ranged from 0%-36% among girls and from 13%-48% among boys.¹⁻⁶ Body dissatisfaction increases with age^{3,6,7} and affects girls more than boys.^{3,8,9} This sex difference, however, is more pronounced in adolescence and adulthood.¹⁰ Overweight and obese children are also more dissatisfied than other children, as has been found in several regions of the world.^{1,3,7,8,11,12} Some studies indicate that body dissatisfaction is associated with lower self-esteem, although the size of this effect varies across studies.^{11,13-15}

The first objective of this study was to document the levels of body dissatisfaction among preadolescents aged 9-14 years. Second, we evaluated if age, sex, body mass index (BMI), and self-esteem were related to body dissatisfaction.

Methods

This study was conducted among 1515 Francophone students aged 9-14 years (Mean = 10.31; SD = 1.07; 50.4% girls) enrolled in third to sixth grade of primary school. The children were from 12 primary schools in the Quebec province of Canada that were randomly selected from about 200 schools that expressed an interest in participating in the study. These schools were located in 4 regions of Quebec: 2 in Saguenay, 2 in Sherbrooke, 3 in the Quebec City area, and 5 in Montreal. Children were also from 2 Francophone schools in Moncton, New Brunswick. Some of these schools were located in privileged areas and others in disadvantaged areas.

Three weeks before the start of data collection, the research protocol was presented to the school administration, and their consent was obtained. Data collection was entirely anonymous making it impossible to identify the respondents at any time. Trained assessors met the students in their physical education classes in order to take their anthropometry measurements and to administer the questionnaires. The children were free to withdraw themselves from the study at

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BMI Body mass index

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any time without any consequences. This study was approved by the University Ethics Committee (anonymized for the peer review process).

A sociodemographic questionnaire was used to collect data on the child's age, sex, and school attended.

Trained assessors weighed and measured the students individually and out of sight of their peers and only one time, as recommended by Lohman et al.¹⁶ Height was measured using a portable stadiometer (Seca model 214; Seca Corporation; Hanover, Maryland) to the nearest 0.1 cm. Body weight was recorded using a portable calibrated mechanical scale (Seca model 760 body mass scale, Seca Corporation) to the nearest 0.5 kg. Students were dressed minimally (physical education outfit) and without shoes. BMI was calculated and classified into 3 categories (underweight, healthy weight, and overweight) according to the standards from the work of Cole et al.^{17,18} These categories were used in the analyses, unless specified otherwise.

Form B of the Culture Free Self-Esteem Inventories-2¹⁹ was used to assess the children's level of self-esteem. The questionnaire consists of 30 statements, and the preadolescents had to choose whether they agreed with each item. The total score was used in this study, which included the 25 items comprising four subscales: (1) general scale (the perception that individuals have of themselves); (2) social scale; (3) academic scale; and (4) parental scale. The psychometric properties have been established and are satisfactory.¹⁹ Cronbach alpha for the total scale was 0.77 in this sample.

The Contour Drawing Rating Scale²⁰ was used to evaluate the child's perceived shape and body dissatisfaction. This questionnaire is composed of 2 scales each presenting 9 figure drawings (ranging from very thin to obese). For the first scale, students were asked, using the sex-appropriate figure drawings, to identify the figure that best matched their current appearance; the figure selected representing their perceived shape. For the second series, students identified the figure that best matched what they would like to be (ideal shape). Then, the discrepancy between the perceived and the ideal shape provided an indication of the level of body dissatisfaction (a negative score indicated a desire for a thinner body shape, and a positive score a desire for a larger body shape).²⁰ For this current study, 5 measures were derived to assess body dissatisfaction: (1) preadolescents satisfied with their perceived shape (perceived shape and ideal body shape being the same; $N = 646$); (2) those wanting a much thinner shape (discrepancy between perceived body shape and ideal body shape ranging from -8 to -3 ; $N = 124$); (3) those wanting a slightly thinner shape (discrepancy between perceived body shape and ideal body shape of -1 or -2 ; $N = 531$); (4) those wanting a slightly larger shape (discrepancy between perceived body shape and ideal body shape of 1 or 2 ; $N = 194$); and (5) those wanting a much larger shape (discrepancy between perceived body shape and ideal body shape ranging from 3 to 8 ; $N = 20$). The reliability and validity of the scale have been demonstrated with a sample of 1056 girls aged between 11 and 14 years of age.²¹ In this study, the

correlation between the perceived body shape and the BMI was .55 and for weight it was .51, which indicates good construct validity. In addition, the physical education teacher also chose a figure representing each of the evaluated children. The correlation between the figures chosen by the student and the teacher was .67, also increasing the validity of this scale in our sample.

Results

Overall, 57.7% of girls and 57.0% of boys were unsatisfied with their body shape. However, the type of body dissatisfaction differed significantly according to the child's sex ($\chi^2 = 70.66$, $P < .001$). Of the girls, 50.5% wanted to be thinner (ie, 87.5% of the dissatisfied girls); this rate was 35.9% for boys (ie, 62.9% of the dissatisfied boys). A higher proportion of boys than girls wanted to be larger (21.9% vs 7.2%). The results indicate that satisfaction also differed according to BMI among both boys ($\chi^2 = 226.27$, $P < .001$) and girls ($\chi^2 = 141.40$, $P < .001$); most of the preadolescents who were overweight or obese were dissatisfied with their shape (Figures 1 and 2). More than one-half of underweight girls (58.0%) and 41.6% of underweight boys were satisfied with their body shape.

A multinomial logistic regression analysis was performed to examine the factors associated with body dissatisfaction. This type of regression was selected to take into account not only those who wanted a thinner body from those who wanted a larger body but also the extent of this dissatisfaction. Sex, age, BMI, perceived shape, and self-esteem were entered into a regression analysis model following a hierarchical procedure against body dissatisfaction, yielding four contrasts: (1) satisfied vs those wanting a much thinner shape; (2) satisfied vs those wanting a slightly thinner shape; (3) satisfied vs those wanting a slightly larger shape; and (4) satisfied vs those wanting a much larger shape. To ease the interpretation of the statistical results, the continuous independent variables in the regression analysis (age, perceived shape, and self-esteem) were standardized (z scores), thus, allowing comparisons among aORs representing a 1 SD change in the variable. BMI was analyzed as 2 dichotomous variables (underweight [yes/no] and overweight/obese [yes/no]).

Main effects for sex, BMI, perceived shape, and self-esteem were obtained (age was not significant; $P = .055$ in the overall model). Taken together, all variables explained 50% (Nagelkerke Pseudo R-Square) of the variance in body dissatisfaction. The Table presents the ORs, 95% CIs, and P values for all correlates (except age as it was not significant) for the 4 contrasts (wanting a slightly thinner, much thinner, slightly larger, or much larger shape).

Overall, there were significant main and strong effects for sex and BMI on body dissatisfaction in 3 contrasts. More specifically, the probability of wanting a slightly thinner or much thinner body shape was 3.8-5.7 times higher, respectively, among girls than boys, compared with children satisfied with their body shape. On the contrary, the probability of

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