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Body image dissatisfaction and changes in adiposity through adolescence

INTRODUCTION

Overweight and body dissatisfaction are two relevant problems in adolescence. Overweight prevalence has been dramatically rising, while body image concerns, namely the thinness as a marker for beauty, is also a Western culture's preoccupation. Despite the cross-sectional association between these two factors is already known, it is not clear whether body dissatisfaction can predict changes in adiposity.

OBJECTIVE

We aimed to prospectively study the effect of body dissatisfaction at age 13 on changes in adiposity between 13 and 17 years, measured as body mass index (BMI) and body fat percentage (BF%).

METHODS

In 2003/2004 we evaluated 2160 adolescents (77.5% participation rate), as part of a Portuguese population-based cohort (EPITeen)¹. Eligible participants were enrolled at public and private schools in Porto, Portugal, and were born in 1990. The second study wave took place in the 2007/2008 school year and 1716 (79.4%) adolescents were re-evaluated.

We included in this analysis 1490 adolescents with complete information on body image, BMI and BF% in both evaluations.

Body dissatisfaction was defined as the difference between perceived and desired body image, assessed by Stunkard figures² at 13 years.

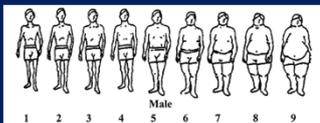


Figure 1: Stunkard figures for boys.

Weight and height were measured and age- and sex-specific BMI z-scores were calculated based on CDC growth charts³. BF% was assessed by bioelectrical impedance (Tanita®).

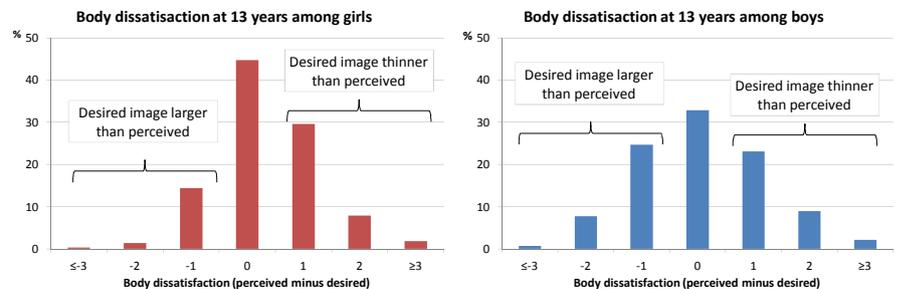
The association between body dissatisfaction and changes in adiposity was computed using linear regression models [regression coefficients (β) and 95% confidence intervals (95%CI)] and adjusted for adiposity measures at 13 years.

References

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RESULTS

At 13 years of age, 39% of girls desired a thinner image than the perceived (body dissatisfaction ≥ 1) and 16% desired a larger image (body dissatisfaction ≤ -1). Among boys the proportions were 34% and 33%, respectively (graph 1).



Graph 1: Body dissatisfaction at 13 years of age, among girls (left) and boys (right).

The prevalence of overweight (BMI $\geq 85^{\text{th}}$) at age 13 was 21.5% in girls and 26.5% in boys. Among normal weight adolescents, 26.3% of girls and 16.2% of boys presented a desired image thinner than perceived, while 20.5% of girls and 4.4% of boys presented a desired image larger than perceived. Among overweight adolescents 86.4% of girls and 84.0% of boys had a desired image thinner than perceived. The proportion of overweight adolescents that desired a image larger than perceived was 0% and 1.6%, respectively for girls and boys.

In crude analysis, adolescents that at 13 years desired a thinner image presented a significant decrease in BMI z-scores from 13 to 17 years [$\beta = -0.152$ (-0.224; -0.080) in girls and $\beta = -0.206$ (-0.296; -0.117) in boys], compared with adolescents who did not have body dissatisfaction (table 1). The opposite effect was found among those who desired a larger image [$\beta = 0.176$ (0.081; 0.272) in girls and $\beta = 0.113$ (0.023; 0.203) in boys]. Similar trends were found regarding changes in BF%. However, after adjustment for adiposity measures at 13 years, these associations lose statistical significance.

Table 1: Association between body dissatisfaction at 13 years of age and subsequent changes in BMI z-score and in BF%.

	Changes in BMI z-score		Changes in BF%	
	Crude β (95%CI)	Adjusted β (95%CI)*	Crude β (95%CI)	Adjusted β (95%CI)**
Body dissatisfaction[†] among girls				
≥ 1	-0.152 (-0.224;-0.080)	-0.003 (-0.082;0.077)	-1.846 (-2.656;-1.035)	0.601 (-0.221;1.424)
0				
≤ -1	0.176 (0.081;0.272)	0.009 (-0.093;0.110)	1.857 (0.779;2.935)	-0.193 (-1.219;0.832)
Body dissatisfaction[†] among boys				
≥ 1	-0.206 (-0.296;-0.117)	-0.102 (-0.202;-0.003)	-3.641 (-4.547;-2.736)	0.595 (-0.354;1.543)
0				
≤ -1	0.113 (0.023;0.203)	0.014 (-0.085;0.113)	-0.201 (-1.114;0.712)	-1.441 (-2.245;-0.636)

* Adjusted for BMI z-score at baseline. ** Adjusted for BF% at baseline.

[†] Perceived minus desired figure: ≥ 1 desired thinner than perceived figure, ≤ -1 desired larger than perceived figure.

CONCLUSIONS

The desire of a thinner image at 13 years was associated with a decrease in adiposity between 13 and 17 years of age, and the desired of a larger image was associated with an increase. However, the associations were dependent on anthropometric measures at 13 years of age.