**INTRODUCTION**

Childhood and adolescent obesity has been associated with the tracking of obesity into adulthood. Additionally, it is also associated with cardiovascular risk factors, such as dyslipidemia, insulin resistance and hypertension even during young ages. However, it is not clear how changes in adiposity during adolescence are related with those cardiovascular risk factors.

**OBJECTIVE**

We aimed to study the association of changes in body mass index (BMI) and waist circumference (WC) during adolescence with cardiovascular risk factors in late adulthood.

**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 1574 adolescents with complete information on BMI, WC and systolic blood pressure (SBP) in both study waves. Additionally, a fasting blood sample was drawn in 861 adolescents to evaluate triglycerides, low density lipoprotein cholesterol (LDLc), high density lipoprotein cholesterol (HDLc), glucose and insulin.

Weight and height were measured age- and sex-specific BMI z-scores were calculated based on CDC growth charts2. WC was classified as below the 75th percentile and at or above it, considering the reference for European-American children and adolescents3.

We computed odds ratio (OR) and 95% confidence intervals (95%CI) using logistic regression to study the association between changes in BMI and WC from 13 to 17 years and outcomes at 17 years. The outcomes were defined as high SBP ≥130mmHg and high DBP ≥85mmHg; low HDLc if values <1st quartile and high triglycerides, high LDLc, high glucose and high insulin if values >4th quartile for each parameter.

**RESULTS**

From 13 to 17 years of age 13.3% of females and 16.9% of males remained overweight or obese. A small proportion of adolescents changed from overweight or obese classes to normal weight (8.2% of females and 10.0% of males) and 2.2% of females and 3.7% of males increased their BMI to a higher category.

In crude analysis, comparing with adolescents who remained normal weight in both study waves, those who remained overweight/obese and those who changed to overweight/obese presented higher values of the cardiovascular risk factors evaluated. However, after adjustment for BMI z-score at age 13 the associations lost statistical significance (table 1). The adjustment for other potential confounders (height, age at menarche, parental education, parental BMI, sedentary and physical activities) did not change those estimates.

**CONCLUSIONS**

Remaining or changing to higher categories of BMI or WC in adolescence period was associated with worse cardiovascular risk profile later in adolescence.

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**References**