BMI, waist circumference and body fat measurements as well as NCD risk factors in 6 to 12 year old children in Switzerland

Abstract

Background Worldwide, the prevalence of overweight and obesity is still on the rise, even though several countries have indicated stabilizations over the past decade. Switzerland has shown a stabilization of the overweight and obesity prevalence between 1999 and 2012, but whether this trend can be sustained is unclear. Thus, the principle aim of this project was to investigate the time trend in the prevalence of overweight and obesity in 6 to 12 year old children in Switzerland over the period from 2002 to 2017/18. Furthermore, a secondary objective was to assess risk factors for the later development of NCDs using a questionnaire.

Methods Using probability-proportionate to size cluster sampling we recruited a nationally representative sample of children aged 6 to 12 years in 2017/18 (n=2279). Height and weight were measured to calculate BMI (kg/m2). BMI cutoffs proposed by the Centers for Disease Control and Prevention (CDC), the International Obesity Task Force and WHO were used to determine prevalence of overweight and obesity. Waist circumference was measured and body fat calculated based on multiple skinfold thicknesses. To evaluate the time trend, data from similar surveys conducted in 2002 (n=2493), 2007 (2218), and 2012 (2963) was included.

Results Using the CDC references, the prevalence (95% CI) of overweight and obesity was 10.6% (9.4-11.9) and 5.3% (4.5-6.3), respectively. With 6.3% (5.0-7.9) the prevalence of obesity was significantly higher in boys compared to girls (4.3% (3.3-5.7)). The time trend analysis between 2002 and 2017/18 showed a weak but significant decrease in the prevalence of overweight including obesity (B(SE)=-0.012 (0.005), p=0.010, OR=0.988 (0.978-0.997)) but no change in obesity (B(SE)=-0.006 (0.008), p=0.471, OR=0.994 (0.979-1.010)). Using % body fat, the prevalence of overweight was 11% (9.8-12.4) while 3.3% (2.6-4.1) were obese. At increased risk for metabolic disease were 6.0% (5.1-7.1) based on waist circumference measurements. The most important risk factors for the development of overweight and obesity as defined by BMI were found to be parental origin, parental education, physical activity as well as gender.

Conclusion We have shown a weak but significant declining trend in the childhood overweight/obesity prevalence over the past 15 years in Switzerland. With two of the most important predictors identified as parental origin and parental education, migrant populations and people with low education seem to be the most promising target groups for prevention programs. Furthermore, our results indicate physical activity should be targeted rather than dietary factors in this age group and that prevention or weight management programs should specifically address boys.