

## Childhood obesity and excess weight: Good news or is the worst still to come?

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Childhood obesity and excess weight have reached epidemic levels, but may be levelling off in many developed countries like France, Sweden, England, Italy and the US [1, 2]. Data from Switzerland from an initial study of 2500 children aged 6–13 years even pointed to a decrease in the prevalence of obesity and overweight in 2007 compared to data from 2002 [3]. As selection bias, due to non-participation for example, might have played a role in this study, the same authors compared their initial data to another sample of 907 children aged 6–13 years in 2009. In this latter study, they did not find a decrease, but rather a stabilisation between 2002 and 2009, but at a relatively high prevalence (17% for girls and 18.7% for boys using American Centers for Disease Control and Prevention [CDC] percentiles) [1]. However, this latter study did also not use general population-based screening, and selection bias due to increased awareness and fear of stigmatisation still might have played a role. Therefore, findings from a population-based dataset, albeit within one city, could to some extent resolve this issue. In the current article in SMW, Jeannot et al. show, in successive cohorts of all children entering the public school system in Geneva between 2003 and 2007, that obesity and overweight was stabilising in young children [4]. Thereby, a total of 18 596 5–6-year-old children were examined. Refusal rates are not stated in numbers but were mentioned to be low. However, the total 3276 children over the 5 years attending private school were not included. Using a BMI reference range of both Cole et al. (International Obesity Task Force, IOTF) and Kromeyer et al. (German percentiles, used in clinical childhood obesity treatment programs), they show a prevalence rate of 8.3% or 5.7%, respectively, for being overweight and 2.9% or 3.4%, respectively, for obesity [4]. These prevalence rates are lower than those in many other developed countries and those mentioned in the other Swiss studies [1–3; 5].

Some additional population-based data exists on the BMI of Swiss children: The Promotion of Health Switzer-

land supports a BMI-monitoring program of the cantons Grisons, Valais, Jura, Geneva and in the cities of Basel, Freiburg, Bern and Zurich for a total of 26 497 children [4]. Results from this monitoring in the school year 2008/2009 showed the following combined prevalence of obesity and excess weight (using the IOTF BMI references ranges of Cole) [5]: 10% (Valais), –17.5% (Geneva!) for children aged 4.3–8.8 years; 12.1% (Grisons), –23.1% (Basel) for children aged 8.3–12.3 years and 15.8% (Grisons), –26.1% (Basel) for adolescents aged 12.8–16.8 years. Thus, it seems that the prevalence of overweight and obesity increases as the age of the children increases, a phenomenon which has been observed in many other countries. Furthermore, the prevalence of overweight and obesity shows differences between rural and urban regions in Switzerland and can reach very high levels (1 in 4 children!) in some regions. The monitoring of BMI in schoolchildren in the cities Basel, Bern and Zurich in the last 3 years also points towards a stabilisation at a high level.

In adults in the German part of Switzerland, a significant increase in reported excess weight and obesity (BMI  $\geq 25$  kg/m<sup>2</sup>) has been observed in the Swiss Health Survey between 1992 and 2007, where the prevalence in women peaked in 2002 and continued to increase in men up to 2007 [6]. However, these possible trend reversals may also be misleading. Population surveys in adults aged 20–84 years (n = 68 829) in Switzerland were assessed by 10-year cohorts and demonstrated an accelerated increase in the prevalence of reported excess weight and obesity (BMI  $\geq 25$  kg/m<sup>2</sup>) in the youngest birth cohort and a lower prevalence in the oldest birth cohort [7]. This could suggest that the current slowdown seen in Switzerland may not herald the onset of a trend reversal. Measured, and not just reported, BMI data are more difficult to find for adults: In a recent study investigating and measuring BMI in 3249 women and 2937 men aged 35–75 years living in Lausanne, the prevalence of being overweight and obesity together was 62.4% in men and 42.6% in women [8]. The prevalence of abdominal obesity was even higher.

In both adults and children, there exist clear sociodemographic determinants of being overweight and obesity: Particularly high levels are found in children with migrant and/or socially disadvantaged backgrounds both in Switzerland and all over the world. There are some indications that the levelling off of excess weight and obesity has

also started to become evident in these populations, though with a certain delay. However, other reports have rather observed growing socioeconomic disparities [9]. Furthermore, interventions in these high risk groups are known to be less effective and more innovative approaches are needed.

The reasons for this levelling off in obesity and overweight in young children remain speculative and are, similar to the rise in obesity and overweight, most likely multifactorial: Jeannot et al. cite a hypothesis of a thermogenic effect based on 2 cold winters in the 2 years preceding the non-significant small decline [4]. It seems, however, unlikely that this will explain the same levelling off observed in many climatically distinct regions. In some countries, national programs like the “Programme National Nutrition Santé PNNS” and other programs in France, might have initial effects. In Switzerland, awareness may have some limited impact. Larger programs like the cantonal action program by the Health Promotion Switzerland have only started in 2007 (and at that time only in 4 cantons). Other projects like “Schweizerisches Netzwerk Gesundheitsfördernder Schulen”, “Schule bewegt” or Jugend & Sport kids (all promoting physical activity and/or healthy nutrition in children) have not been implemented long and widely enough and are also not intensive enough to lead by themselves to larger behavioural changes in the observed time range. Another example, the project “Purzelbaum”, started in 2004 in preschool kindergarten children in Basel, but it is only in the last 2 years that it has started to be implemented in many cantons in Switzerland. Maybe we are also seeing a “saturation effect”, in that the (genetically) predisposed individuals are already overweight or obese. Adenoviruses are also believed to contribute to obesity [10]. Thus, has the infection stopped spreading? Finally, no one knows if this is a “true plateau” or even the beginning of a decrease, or if it represents a temporary situation before the next rise. Worrying for the latter arguments is the recently gained knowledge concerning the impact of epigenetics and the “transmission of health and disease” over several generations. The prevalence of overweight and obesity in the children, adolescents and young adults of today is substantially higher than in the 1970’s, also in Switzerland. In 2008, 1 in 3 US children was either overweight or obese [2] and in some regions of Switzerland, the prevalence is up to 1 in 4 children. When these children will be parents, their children will be exposed to worse starting conditions, particularly (but not exclusively) due to differences in the intrauterine exposure. Indeed, offspring of overweight mothers are more frequently macrosomic at birth and overweight and obese during childhood. Their future childrens’ prevalence of childhood overweight and obesity might be influenced by such factors. Answers

to these questions, however, will only start to be available in 10–20 years.

On a broader perspective, obesity is just one lifestyle-related cardiovascular risk factor and physical activity and/or aerobic fitness are both important determinants of cardiovascular morbidity and mortality. Temporal changes in physical activity behaviour in children are difficult to follow, as previous studies have focused on reported, and not measured, physical activity. However, studies have shown that surrogates of physical activity like motor skills have declined in children, though there are no longitudinal data in Swiss children. Furthermore, aerobic fitness has declined in many countries in the last 10–20 years in children and adolescents [11].

Thus, the results of the current study by Jeannot et al. [4] as well as some of the other Swiss studies are encouraging. However, efforts should be made to get the levels back to those seen in the 1970’s, particularly in older children and adolescents. This is essential in order to prevent risk transmission to further generations and will avoid “the worst to come”. Efforts should also be made to combat inactivity and low fitness. Where should we start? Firstly, we need very early and continuous primary prevention.

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