

Invited Speaker Plenary 5: Obesity/Diabetes/Metabolic Syndrome

Predictors of weight gain in childhood and adolescence

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Overweight and obesity in childhood and adolescence are increasingly prevalent in westernised countries, and in countries undergoing economic transition.¹ An improved understanding of the factors promoting, or protecting against, the development of obesity is important for effective public health and clinical interventions. There is a strong familial association with obesity, a major part of this association being via a shared genetic predisposition. However, the increased prevalence of obesity in recent decades in genetically stable populations highlights the central role of environmental trends in the development of the obesity epidemic. Obesity has a strong association with socioeconomic status (SES), with higher prevalence levels among children in lower SES strata in westernised countries.¹

There is an association between birth weight and later in children or young adults (sometimes a linear relation, occasionally U-shaped or J-shaped).² Early infant feeding is important, with breast-feeding having a small but protective effect against the development of later overweight.³ Other early factors predicting excess weight gain in childhood include rapid catch-up growth by age 2 years and an earlier adiposity rebound.⁴

The association between television viewing and obesity in childhood and adolescence has been demonstrated in both cross-sectional and longitudinal studies^{4,5} including a prospective study in western Sydney, the Nepean Cohort.⁶ Several possible mechanisms may explain this association, including: increased exposure of children to food marketing; increased snacking of energy-dense foods; displacement of time spent in more physical activities; and reinforcement of sedentary behaviours.

The increased prevalence of obesity in recent decades has resulted, at least in part, from changes in dietary intake, such as an increase in the consumption of energy-dense, micronutrient-poor foods or in sugar-sweetened drinks.^{7,8} Consumption of soft drinks at baseline is associated with increased weight gain in young adolescents in the US,⁸ data recently confirmed in the Nepean Cohort followed over a 5 year period until 12/13 years.⁹ The relative contributions of dietary fat (versus energy) intake, glycaemic index, portion sizes and specific eating patterns to the development of obesity remain unclear, although all may play an important role.

A review of physical activity and obesity in childhood has shown that lower physical activity levels and sedentary behaviours are associated with a higher prevalence of obesity in children.¹ Prospective studies in early childhood suggest that physical activity may have a protective effect on the development of excess weight gain in mid-childhood. And in the Nepean Cohort, decreased "vigorous activity" at 7/8 years was associated with an increased risk of overweight at age 12/13 years.⁶ The association between parental and child obesity is well-known,^{1,4} a finding also confirmed in the Nepean Cohort Study, where maternal obesity was the strongest predictor of excess weight gain at age 12/13 years,⁶ probably reflecting both shared genetic and (obesogenic) lifestyle factors. These data are in keeping with the concept that both sides of the energy balance equation (energy intake and energy expenditure) are important in the development of obesity in young people.

References

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