

Parental lifestyle patterns around pregnancy and risk of childhood obesity in four European birth cohort studies



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Abstract

Background A high prevalence of excess weight in children younger than 5 years suggests the involvement of early-life risk factors. The preconception and pregnancy periods are crucial stages for the implementation of interventions to prevent childhood obesity. Most studies so far have evaluated the effects of early-life factors separately, with only a few investigating the combined effect of parental lifestyle factors. Our objective was to fill the literature gap regarding parental lifestyle factors in the preconception and pregnancy periods and to study their association with the risk of overweight in children after the age of 5 years.

Methods We harmonised and interpreted data from four European mother–offspring cohorts (EDEN [comprising 1900 families], Elfe [comprising 18 000 families], Lifeways [comprising 1100 families], and Generation R [comprising 9500 families]). Written informed consent was obtained from parents of all involved children. Lifestyle factor data collected through questionnaires comprised parental smoking, BMI, gestational weight gain, diet, physical activity, and sedentary behaviour. We applied principal component analyses to identify multiple lifestyle patterns in preconception and pregnancy. Their association with child BMI z-score and risk of overweight (including obesity, overweight and obesity, as defined by the International Task Force reference) between the ages of 5 and 12 years were assessed using cohort-specific multivariable linear and logistic regression models (adjusted for confounders including parental age, education level, employment status, geographic origin, parity, and household income).

Findings Among the various lifestyle patterns identified in all cohorts, the two that better explained variance were high parental smoking plus low maternal diet quality or high maternal sedentary behaviour, and high parental BMI plus low gestational weight gain. Overall, we observed that patterns characterised by high parental BMI, smoking, low-quality diet, or sedentary lifestyle before or during pregnancy were associated with higher BMI z-scores and risk of overweight and obesity in children aged 5–12 years.

Interpretation Our data contribute to a better understanding of how parental lifestyle factors might be associated with the risk of childhood obesity. These findings are valuable to inform future family-based and multi-behavioural child obesity prevention strategies in early life.

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Contributors

ML, RG, BH, and SL conceptualised the study. M-AC, CMP, RG, and BH acquired funding. ML, MG, MT, AD, JRH, and BH curated the data. ML, MS, AO, and AMA analysed the data. BH and SL supervised the project and validated the data. ML, BH, and SL wrote the original draft. All authors revised the abstract and read and approved the final version for publication.

Declaration of interests

JRH owns controlling interest in Connecting Health Innovations, a company that has licensed the right to his invention of the dietary inflammatory index from the University of South Carolina to develop computer and smart phone applications for patient counselling and dietary intervention in clinical settings. All other authors declare no competing interests.

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