

# Factors associated with childhood obesity or overweight in children under five years old: A rapid review

## EXECUTIVE SUMMARY

September 2024

### What is a Rapid Review?

Our rapid reviews use a variation of the systematic-review approach, abbreviating or omitting some components to generate the evidence to inform stakeholders promptly whilst maintaining attention to bias. This work is an independent rapid review of systematic reviews.

### Who is this Rapid Review for?

This work was requested by the Welsh Government Public Health and Inequalities team, as part of the Wellbeing and Future Generations Act work, to help inform the 'Healthy Weight: Healthy Wales' strategy and delivery plans. This rapid review may be helpful for policy makers and others involved in children's health in Wales.

### Background / Aim of Rapid Review

- Over one-quarter of children aged four to five years old in Wales are either overweight or obese. Children who are overweight or obese may experience health issues during childhood and/or adolescence. They are also more likely to be overweight or obese through to adulthood, which can cause associated health problems. A wide range of biological (e.g. genetics), psychological, environmental (e.g. barriers to physical activity and access to healthier foods) and societal (e.g. lifestyle and peer influence) factors can potentially be associated with childhood obesity or overweight.
- Multiple evidence reviews of factors associated with childhood obesity or overweight already exist, but these examine the influence of the factors listed above across a range of ages. No up-to-date review focuses specifically on factors associated with obesity or overweight when both the factor and its impact on weight status were studied in children under five years of age.
- We aimed to review existing reviews to identify the factors associated with obesity and overweight, specifically when impact on weight status was reported in children under five years of age. This will help to inform the start of an ongoing piece of work looking into the root causes of obesity or overweight in this age group.

### Results

#### *Date of the literature search*

- The review included evidence available up until December 2023.

#### *Extent of the evidence base*

- Thirty systematic reviews (thorough and detailed reviews of existing literature on a specific topic) of research evidence were identified.
- Most studies in the reviews were large cohort studies. Studies of this design can identify factors associated with childhood obesity or overweight, but cannot necessarily identify cause-and-effect relationships between the factors studied and childhood obesity or overweight.
- The USA was the most frequently reported country in which studies were conducted (reported in 21 systematic reviews). Twenty-eight systematic reviews included studies that were conducted in countries where the findings are likely to be broadly transferable to the UK. Thirteen reviews included studies conducted in the UK.

### Key findings from the evidence

- A wide range of biological, psychological, environmental and societal factors were identified as being associated with childhood obesity or overweight. In some cases, multiple studies provided evidence on the relationship between the same factor and overweight and/or obesity. We assessed each individual study for how certain the findings are, and for some factors we found a mixture of high-, moderate-, low-, and very-low certainty evidence.
- **Factors consistently found to be associated with an increased risk of childhood obesity and/or overweight:** maternal obesity or overweight; caesarean delivery; babies born larger than expected for their age and sex; babies with catch-up growth during the first two years of life; consumption of food high in sugar, fried or fatty-foods, and fast-food; high dietary diversity (e.g. access to greater variety of energy-dense food might increase food intake); short sleep duration; maternal under-evaluation of a child's weight; mothers who work (e.g. may rely more on fast foods and children may have more sedentary behaviours), and increasing maternal working hours; children with wealthier parents; maternal attainment of primary school; watching television for more than two hours per day; full-time hours at informal childcare given by grandparents or non-grandparents, or part-time hours at informal childcare given by grandparents.
- **Factors consistently found to be associated with a decreased risk of childhood obesity and/or overweight:** breastfeeding; larger household size.
- **Factors with mixed findings on their association with childhood obesity and/or overweight (a mixture of association, which could include an increased risk, decreased risk, and/or no statistically significant association):** maternal pre-pregnancy underweight; rapid weight gain during the first zero to two years of life; babies born smaller than expected for their age and sex; prenatal or postnatal antibiotic exposure; baby-led weaning or baby-led introduction to solids; responsive complementary feeding; timing of weaning; dairy consumption (lower-fat milk compared to higher-fat milk); sugar consumption (beverages); maternal attainment of secondary school; maternal smoking during pregnancy.
- **Factors consistently found to have a lack of evidence for an association with childhood obesity and/or overweight:** protein consumption; prenatal exposure to bisphenol A (BPA, found in plastics, metal can linings, tickets and receipts); paternal smoking during pregnancy; part-time or an unspecified amount of time at informal childcare given by non-grandparents or an unspecified caregiver; part-time or full-time hours at formal childcare in a childcare centre or nursery.
- Two qualitative systematic reviews were identified. One of the themes in these reviews was how infant feeding practices are influenced by cultural and family factors. This theme is closely related to the quantitative findings on feeding in infancy, diet in childhood and caregiver behaviour. A second main theme identified in the qualitative evidence was parenting style, which was not closely related to any of the quantitative evidence on factors associated with childhood obesity or overweight.

### Evidence into practice opportunities

- The most robust findings are provided by high- or moderate-certainty evidence. However, a mixture of high-, moderate-, low-, and very-low certainty evidence was identified for some factors assessed by multiple studies.
- The **high-certainty evidence** supports:
  - Helping overweight women, who are thinking about having a baby or trying to conceive, to lose weight. Note that there was also low-certainty evidence for this factor reported by some studies.
  - Reducing rapid weight gain during the first 12 months of life. Note that there was also moderate- and low-certainty evidence for this factor reported by some studies.
  - Providing opportunities for children of working mothers to access healthier foods and be more physically active, particularly if the mothers work long hours.

- The **moderate-certainty evidence** supports:
  - Promoting breastfeeding.
  - Reducing rapid weight gain during the first 13 months of life.
  - Monitoring the child's growth rate during the first two years of life, particularly of babies with catch-up growth (see Glossary).
  - Promoting baby-led weaning.
  - Focusing on reduction of the regular consumption of sugar-containing beverages.
  - Educating and supporting grandparents and other informal caregivers to provide healthier foods and opportunities for play or physical activity for children.
- The findings from this review may differ from other reviews conducted to inform practice due to differences in scope. This review only reports on obesity or overweight outcomes where they are measured before the age of five years, whereas previous reviews have measured these outcomes over a wider age range. This review also focusses on evidence that specifically classifies children as overweight or obese using body mass index (or other well-accepted measures for children under two years), whereas other reviews have included a more diffuse range of weight-related outcomes.

### Research implications and evidence gaps

- Most of the **high-certainty evidence** related to childhood **overweight**. There was some high-certainty evidence related to childhood obesity or overweight, but **no high-certainty evidence** was identified on the association between factors and childhood **obesity specifically**. This suggests that more robust studies, clearly reporting methods, outcomes and risk of bias, are needed that investigate factors associated with childhood obesity. Further targeted evidence reviews focusing on the association between individual or specific factors and obesity could confirm this.
- There is **limited evidence** regarding obesity or overweight outcomes in **children under two years old**.
- There is **limited evidence** on the **role of fathers** in the development of childhood obesity or overweight.
- There is **limited qualitative evidence** on factors associated with childhood obesity or overweight. There is a need for this to be explored further in a UK setting.
- Due to the complexity and certainty of the evidence, it is **difficult to conclude which factors directly result in the occurrence of childhood obesity or overweight**. More experimental studies, which can better establish cause-and-effect relationships between specific factors and childhood obesity or overweight, are needed.

### Economic considerations

- In the UK, disparities in childhood poverty have been identified as a key factor explaining variation in prevalence of obesity and overweight in children of reception age (four to five years), and local authorities with the greatest proportion of children aged under-five years living in households in receipt of out-of-work benefits have the highest proportion of children aged three to five years who are obese or overweight.
- Childhood obesity or overweight is positively associated with increased lifetime healthcare resource utilisation.

**Certainty of evidence:** The certainty of evidence for this review has been assessed using the GRADE (Grading of Recommendation, Assessment, Development and Evaluation) approach (<https://www.gradeworkinggroup.org/>)