

# Ultra-processed food intake of young children in the UK: findings from the Gemini twin cohort

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Ultra-processed foods (UPFs) have been hypothesised as a contributor to childhood obesity. An association has been shown between increases in dietary share of UPFs and increases in free sugars and decreases in fibre in children aged 2 to 19 years in a multi-country study<sup>(1)</sup>. Salt has also been highlighted as a nutrient of concern with regard to UPFs. The impact of UPFs on the nutrient profile of children younger than 2 years of age is unclear.

This study aimed to assess UPF intake in young children and associations with nutrient profiles.

Data were from Gemini, a population-based birth cohort of twins (*n*4804) born in the UK in 2007. Parent-completed 3-day diet diaries were available for 2336 children aged 21 months. All foods and drinks consumed by children were classified using the NOVA classification system<sup>(2)</sup>. The contribution of UPFs to total energy intake was evaluated for the complete sample and children were also categorised into quintiles of consumption. Complex samples general linear regression was performed to account for clustering of twin data within families. Separate regression models tested associations between quintile of UPF intake (% energy) and intake of free sugars, fibre (AOAC) and sodium. Statistical analysis was performed using SPSS 27.

Mean energy intake of children was 1038 calories (SD 187) per day. We found unprocessed or minimally processed foods contributed 43.8% of energy (SD 13.8), processed culinary ingredients 1.4% of energy (SD 2.3), processed foods 7.8% of energy (SD 5.9) and ultra-processed foods 47.0% of energy (SD 14.7). When consumption was evaluated as quintiles, we found UPFs accounted for 28%, 38%, 46%, 54% and 69% of energy intake. The most frequently consumed UPFs were fruit drink concentrates, white bread, low fibre breakfast cereals, biscuits, fromage frais, wholemeal bread, high fibre breakfast cereals and yogurts.

As the contribution of UPFs to total energy intake increased, dietary intake of free sugars and sodium increased, with significant linear trends across quintiles of consumption ( $P < 0.001$ ). No association was observed between quintile of UPF consumption and fibre intake ( $P = 0.58$ ). Young children in the highest quintile for UPFs, consumed a mean of 35.1g/day free sugars (SD 16.1). UK government advice is to avoid feeding sugar-sweetened foods and drinks to children under 4 years of age but intake in this group exceeded the UK guideline amount of 19g/day for 4–6 year old children<sup>(3)</sup>. Children in the highest UPF quintile also consumed 3.1g/day salt (SD 1.0), which is 1.5 times the recommended limit for 1–3 year old children in the UK<sup>(3)</sup>.

Our findings show that UPFs contribute substantially to dietary intake of young children in the UK. Further, increased intake of UPFs is associated with increased free sugars and salt consumption.

## References

1. Neri D, Steele EM, Khandpur N *et al.* (2022) *Obes Rev* 9 (23), S1.
2. Monteiro C, Cannon G & Levy R (2019) *Public Heal Nutr* 22(5), 936–41.
3. NHS. *Food types* [Available at <https://www.nhs.uk/live-well/eat-well/food-types/>]