



## A range of environmental factors contribute to rise in childhood obesity

- **Research shows that ultra-processed foods (UPFs), early life influences, and pollution all contribute to rising childhood obesity**
- **The common message to ‘eat less and move more’ oversimplifies the causes and solutions to childhood obesity**
- **Obesity is not a question of personal responsibility. STOP calls for comprehensive actions on the influences that drive behaviours**

New research published in *Obesity Reviews* (1) in the lead up to World Obesity Day (2) reiterates the interactions between genes and environment which are driving the childhood obesity epidemic, reinforcing the need for political leadership beyond the common urge for people to take ‘personal responsibility over their condition.

The latest series of ten papers, published as an *Obesity Reviews* Supplement by the Horizon 2020 funded EU project STOP (3), explores many potential drivers of obesity, from prenatal exposures, to dietary patterns and the impact of sedentary behaviour, through to the role of epigenetics. What’s clear is that there is no one driver, and indeed that the drivers are much more complex than being simply about energy balance.

A number of important findings were identified which enhance our understanding of the drivers and therefore solutions to childhood obesity:

- **Pre-birth and early life influences on gut health:** A comprehensive literature review found that weight gain during pregnancy, low birth weight, birth and feeding methods, among other exposures in early phases of life, affect the infant microbiota, which in turn has implications for childhood obesity risk (4)
- **Pollution exposure and impact of built environments:** New findings suggest that there is a strong impact of traffic-related air pollution (NO<sub>2</sub> and NO<sub>x</sub>) on increased weight in childhood, based on data from <30,000 children and adolescents until the age of 18 across 8 countries. Air pollution results in changes in both individual behaviour and the way our genes work. In addition, living in close vicinity to parks was associated with decreased prevalence of childhood obesity (5)
- **Ultra-processed foods and diets:** Data across 8 countries, including Chile, Colombia, Mexico, and Brazil, suggests that the altered nutrient profile of UPFs is a key driver of childhood obesity. Marketing and peer-group influences related to UPF further increase the risk of developing obesity (6)

These three factors likely interact at different levels of importance and significance, alongside other known determinants of childhood obesity, such as genetics, physiology, mental health, and inequalities. They may help explain the rise in childhood obesity across Europe over the last few decades. What’s important now is that we use these findings to shape policy priorities in order to create healthier environments and reduce the risk posed by these factors.

Professor Franco Sassi, Director of the Centre for Health Economics and Policy Innovation at Imperial College Business School and STOP Project Coordinator says: “*Obesity is often simplistically viewed as a matter of individual responsibility. But today we know that many factors on which individuals have limited or no control contribute to obesity. The STOP Obesity Reviews supplement highlights, among others, the consequences of air pollution on physical activity and health; the risks linked with highly industrially processed, and heavily promoted, foods; and, the importance of a healthy start in life.*”



This World Obesity Day (2) is focused on ‘Taking Action’, and the findings presented in the new Supplement provide evidence to support recommendations for priority and new actions that can be taken by European policymakers, researchers and funders to help address childhood obesity:

- **Reducing accessibility and affordability of UPFs:** Policymakers need to assess the impact of existing policies that are in place to limit the consumption of foods that contain many added ingredients and are highly manipulated. Instead, healthier food options that are clearly labelled for consumers must be marketed and available at affordable prices.
- **Increase access to safe, open, green spaces:** Increasing the presence (and accessibility) of parks is not only a strategy to address air pollution but should be considered in global efforts to improve physical and mental health, and in turn help reduce childhood obesity.
- **Understanding the microbiome:** The research points towards a new childhood obesity prevention target; improving the microbiome composition during pregnancy and early life which requires further understanding and policy prioritisation
- **Further research:** Specific areas for urgent further research have been identified, particularly to assess the role of specific molecules in the blood, and the impact of traffic-related nitrogen dioxide and nitrogen oxides on the risk of developing childhood obesity.

As STOP enters its final phase, it will continue collaborating with other EU-funded projects to highlight research gaps and identify new interventions that address childhood obesity in Europe. At a World Café series hosted by the World Obesity Federation in 2021, STOP shared these preliminary findings on childhood obesity determinants with [CO-CREATE](#), [JA Best ReMaP](#), and [PEN](#). Watch it [here](#).

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#### Notes:

- (1) The Supplement can be accessed here:  
<https://onlinelibrary.wiley.com/toc/1467789x/2022/23/S1>
- (2) World Obesity Day takes place annually on 4th March. This year the focus is on action, and calls on everyone to do their bit to take action on obesity. Visit [www.worldobesityday.org](http://www.worldobesityday.org)
- (3) **About the STOP project:** Led by Imperial College London and part of the Horizon 2020 programme, the Science and Technology in childhood Obesity Policy (STOP) is a four-year European Commission-funded project which brings together 31 international research, advocacy and governmental organisations from 16 countries to generate scientifically sound and policy-relevant evidence on the factors that have contributed to the spread of childhood obesity in European countries, and on the effects of alternative policy options available to address them. The project engages international partners from different policy-contexts in the United Kingdom, Italy, Estonia, Romania, Portugal, France, Belgium, Slovenia, Sweden, Croatia, Spain, Finland, Switzerland, with additional partners in New Zealand and the USA. For more information about the STOP project, visit <http://www.stopchildobesity.eu/>
- (4) de Cuevillas, B, Milagro, FI, Tur, JA, et al. Fecal microbiota relationships with childhood obesity: A scoping comprehensive review. *Obesity Reviews*. 2022; 23( S1):e13394. doi:10.1111/obr.13394
- (5) Malacarne, D, Handakas, E, Robinson, O, et al. The built environment as determinant of childhood obesity: A systematic literature review. *Obesity Reviews*. 2022; 23( S1):e13385. doi:10.1111/obr.13385
- (6) Neri, D, Steele, EM, Khandpur, N, et al. Ultraprocessed food consumption and dietary nutrient profiles associated with obesity: A multicountry study of children and adolescents. *Obesity Reviews*. 2022; 23( S1):e13387. doi:10.1111/obr.13387



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