Born in Bradford: can a research study change a city?

Professor John Wright, doctor and epidemiologist leading Born in Bradford and the Bradford Institute for Health Research, shares the ongoing work of an 18-year health study that aims to create a healthier city for future generations after presenting it at the December 2025 Update in medicine – Cardiff.

It is a remarkable and sobering fact that two thirds of adults in the UK are now overweight or obese. The consequences of this epidemic are evident in every organ system; insulin resistance and type 2 diabetes, hypertension and cardiovascular disease, osteoarthritis and chronic pain, fatty liver disease, sleep apnoea, subfertility, and cancers of the breast, colon and pancreas. Beyond physiology, the psychological toll is equally profound, contributing to stigma, low self-esteem and depression.

Yet this is not a problem that begins in adulthood. The origins of obesity lie in the earliest years of life. Over the past half century, childhood obesity in the UK has quadrupled. One in four children now leave primary school clinically obese, and the gradient of inequality is striking – rates are twice as high in the most deprived areas as in the least. These are not random variations, but predictable patterns driven by structural disadvantage, environmental exposures and social determinants.

Since 2007, at Born in Bradford, we have been following more than 30,000 children from birth to understand these patterns and their causes. Birth cohorts such as this are among the most powerful designs in epidemiology; they allow us to observe exposures before birth, track biological and social influences across childhood – and reveal how these shape lifelong health trajectories.

Eighteen years of research, ranging from genomics and metabolomics to air pollution and education, have yielded two overarching truths. First, that early life is a critical window in which biology and environment interact to set trajectories for health and disease. Second, that inequality profoundly alters those trajectories, leading to diverging outcomes in health, attainment and opportunity.

Emerging evidence now adds further clarity to how these early-life mechanisms operate. Recent findings from the Born in Bradford cohort show that maternal health in pregnancy can influence children's immune vulnerability for years to come. A recent study found that children born to mothers with higher BMI in the first trimester experienced higher rates of infection across childhood and adolescence, particularly respiratory and skin infections. The relationship strengthened with age, indicating that the biological imprint of maternal obesity persists well beyond infancy. This reinforces the need to support women's health before conception and during pregnancy – and highlights how intergenerational influences contribute to widening or narrowing health inequalities.

We now inhabit an era of complex causation. The tidy one-to-one relationships between smoking and lung cancer, or viruses and infection have given way to webs of interdependent influences.

Childhood obesity, the most common physical health challenge in young people, and mental health problems, the most prevalent psychological one, both arise from these tangled systems. Diet and physical activity are merely the surface features of deeper forces; neighbourhood deprivation, access to green space, marketing and food environments, family stress, educational opportunity and cultural norms. There is no single cause and therefore, no single cure.

Born in Bradford was established as an applied health research programme, aiming not just to understand, but to act. In the early days, our interventions focused on individuals; advice to eat less, move more, make better choices. Over time, however, the science taught us humility. Individuals make choices, but those choices are made within systems. The determinants of health – income, housing, education, employment, air quality, transport – lie largely outside the clinic. To change outcomes, we must change the system itself.

nspired by Jane Jacobs' vision of the city as a living laboratory, 'an immense laboratory of trial and error, failure and success,' we have developed Bradford as a City Collaboratory; a real-world testbed for prevention science. Researchers, clinicians, policymakers and communities co-design and evaluate interventions that operate at multiple levels, from the school meal to the urban plan. This approach treats the city as a complex adaptive system; dynamic, self-organising and capable of tipping into healthier states when enough levers are pulled in the same direction.

Central to this work is co-production. Sustainable change requires partnership with the people whose lives we seek to improve. Community engagement and citizen science underpin our interventions, ensuring relevance and legitimacy. Equally important is the partnership with local and national policymakers; evidence from Born in Bradford has informed initiatives from active travel and

school-based physical activity to clean air zones and social prescribing.

None of this is possible without data. Connected Bradford, our linked dataset of over 600,000 citizens, integrates health, education, social care, environmental and crime data. It provides the infrastructure to evaluate complex interventions in real time and at scale, transforming routine data into a population-level instrument for prevention.

Our strapline, 'research that changes a city', captures both the ambition and the challenge. Changing complex systems is painstaking, but systems can reach tipping points.

Through healthier school meals, safer and greener streets, active transport, supportive schools and faith settings, cleaner air and fairer opportunities, we may yet tilt the balance towards a healthier generation.

If the causes of obesity are complex, so too must be the cure. Born in Bradford offers a blueprint for the science of prevention, rooted in data, equity and community, that could reshape not just one city, but the health of a nation.

This feature was produced for the December 2025 edition of *Commentary* magazine. You can read a web-based version, which includes images.