

Early nutrition and long-term health

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The idea that nutrition during critical windows in development influences, or 'program', long-term health is strongly supported by randomized controlled trials in humans. For instance, we showed that breast-feeding compared to formula feeding decreased the propensity to obesity, dyslipidaemia, high blood pressure, and insulin resistance, while a higher plane of postnatal nutrition that promoted faster postnatal growth programmed greater cardiovascular disease risk. As a unifying hypothesis we proposed that postnatal growth acceleration (upward centile crossing) could explain, in part, adverse programming effects in infants born small for gestation (who show 'catch-up' growth immediately after birth) and long-term cardiovascular benefits in babies breast-fed (who are relatively undernourished and have slower growth compared to those given formula).

Consistent with our hypothesis, >50 observational studies and 5 randomized trials have now confirmed that faster growth in infancy increases the later risk of obesity and cardiovascular disease. This effect is seen in high- and low-income countries, in infants born at term or preterm, and infants born with low or appropriate weight for gestation. In fact, the concept of 'grow now, pay later' appears to be a widespread, evolutionary conserved phenomenon seen across diverse animal species. This presentation will review the latest evidence for nutritional programming of obesity and cardiovascular disease. It will discuss current controversies in nutritional programming such as the risk/benefit of faster weight gain in infants born preterm and those born at term but small for gestation. Finally, it will consider the implications of nutritional programming for public health and clinical practice.

Biography

Atul Singhal is the Director of the Childhood Nutrition Research Centre, Institute of Child Health, University College, London. He is also Professor in Paediatric Nutrition at University College London and holds Honorary Consultant Paediatrician posts at the Whittington and Great-Ormond Street Hospitals. He has broad interests in paediatric nutrition but his research focuses on the influence of early nutrition for long-term health, the effects of nutritional interventions to reduce long-term cardiovascular risk, and nutritional interventions for obesity.