



# Exploring the Predictors of Socio-economic Variation in Child Overweight and Obesity in Ireland: A Sociological Analysis

## 1. What was the study's purpose?

This study addressed the issue of childhood overweight and obesity in Ireland. In the early stages of the study, the socially structured distribution of overweight and obesity was established, with the mechanisms by which it occurs then explored. The focus of the thesis was on the relationship between children and their social and physical environment, and as such was informed by the belief that where risk factors are identified through the application of statistical methods, the underlying mechanisms are seldom deterministic, with causal pathways often heterogeneous. The specific objectives were to:

- a. Describe the socio-economic status gradient in the distribution of childhood overweight and obesity with an increased risk found among less advantaged groups.
- b. Examine the extent to which social and economic variation in early life nutrition and maternal health behaviours in pregnancy influence the growth trajectories of infants up to three years of age.
- c. Test if social and economic variation in the prevalence of overweight and obesity in middle childhood are partially explained by infant feeding practices and maternal smoking during pregnancy.
- d. Examine if children's level of physical activity and sedentary behaviours are both directly and indirectly influenced by family socio-economic status. The hypotheses tested were that family income directly influences physical activity through available resources. Socio-economic status indirectly influences physical activity through housing location, with children who live

in neighbourhoods that are perceived as being unsafe – or that have poor availability of recreation facilities – less physically active than their peers.

- e. Assess whether child dietary quality is directly influenced by socio-economic variation in familial dietary practices and is indirectly influenced by socio-economic variation in the local food environment.

This briefing note summarises the method of research, key findings, conclusions and recommendations of the study.

## 2. How was the study undertaken?

The study involved secondary quantitative data analysis of information collected as part of the *Growing Up in Ireland – The National Longitudinal Study of Children in Ireland (NLSCI)* project, which began following the development of two groups of children in 2007/2008. While the main evidence base was the child cohort comprising more than 8,000 nine-year-old children, use was also made of longitudinal data from the infant cohort, whose families were interviewed when the children were aged both nine years, and 36 months, respectively. Informed conceptually by Ecological Systems Theory, the study employed a number of variants of multilevel statistical modelling techniques to account for the hierarchical nature of the data and the fact that child outcomes are influenced by features of the individual child, the household they live in, and their neighbourhood environment.

### 3. What are the key findings?

#### 3.1 The socio-economic distribution of childhood overweight and obesity

- » Evidence was provided to demonstrate that childhood overweight and obesity are unequally distributed across society and that there are regularities within this unbalanced distribution which enable the identification of particularly at-risk groups. As is the case with many developmental and adult outcomes, the prevalence of overweight and obesity among children was observed to be highly socially structured, with an increased risk of negative outcomes associated with the position of the children's households on the social hierarchy.
- » Strong independent associations between household social class, Primary Caregiver education, household equivalised income, neighbourhood socio-economic status, and the risk of obesity were found. In each case a higher probability of obesity was found among children from more disadvantaged households.
- » Social class gradients in overweight and obesity among the children were larger than those found for education, and household equivalised income.
- » The probability of overweight and obesity associated with household income was mediated by maternal weight status.
- » The mechanisms driving the distribution of overweight and obesity among children are probabilistic rather than deterministic, with lower socio-economic status increasing the likelihood of poor outcomes through its role in structuring other mediating variables

#### 3.2 Early life factors, infant weight trajectories, and overweight and obesity among nine-year-olds

- » Pre- and post-natal factors associated with early growth, including rapid weight gain from birth to 36 months, and weight status at nine years of age, were explored with a view to identifying the mechanisms by which the structured distribution of overweight and obesity came about.
- » Clear differences were identified in the growth trajectories of infants from birth to 36 months, with infants from lower socio-economic households tending to be born lighter but growing to be heavier than their more advantaged peers by the time they reached three years of age.

- » Both breastfeeding and weaning practices were also socially structured according to socio-economic status as measured by both social class and maternal education.
- » Both lower household social class and level of maternal educational achievement were independently associated with an increased likelihood of rapid weight gain among the infant cohort.
- » Early gestational age, maternal smoking during all three trimesters of pregnancy, maternal obesity, and current maternal smoking were all associated with an increased probability of rapid weight gain relative to other infants; by contrast, longer duration of breastfeeding was found to protect against rapid weight gain. These variables explained much of the observed differentials between different social classes and maternal education groups.
- » Among the nine-year-old cohort, adjustment for early feeding practices and maternal smoking did not fully account for social class and maternal education differentials in obesity risk, illustrating that the protective impact of, for example, breastfeeding, does not reduce the probability of overweight or obesity in later childhood.

#### 3.3 Factors that encourage or inhibit physical activity among children

- » Using both parental and child subjective perceptions of the neighbourhoods in which they lived, it was found that children who live in neighbourhoods perceived as being unsafe, or with poor availability of recreation facilities, were less physically active than their peers. In particular, children from neighbourhoods considered unsafe during the day, with no safe areas where they could play, and an absence of 'good places to play', were all found to be negatively associated with physical activity. As well as highlighting the importance of the local environment to physical activity, this also demonstrates that the perspective of the child is central to their use of available resources and their own levels of physical activity.

#### 3.4 Diet, dietary behaviours and the local food environment

- » Healthy breakfast-eating habits and shared family mealtimes were found to be associated with better overall dietary quality. There were clear differences in dietary quality and associated

behaviours among the children, with children from lower socio-economic households more likely to have poorer quality diets.

- » Lower socio-economic groups tended towards unhealthier behaviours.
- » The association between dietary quality and social class was mediated by maternal weight status and education.
- » Low maternal education was found to be more strongly associated with poorer dietary quality among children than with either income or social class.
- » The quality of children's diet was also influenced by socio-economic variation in the local food environment.

#### 4. What are the conclusions?

The study reached six overall conclusions. As follows:

1. Childhood overweight and obesity are socially structured, with children from less advantaged households and neighbourhoods found to have an increased risk.
2. Variation, according to socio-economic status, in the physical growth of children can be partly explained by differences in maternal practices during pregnancy and early infant feeding. However, the protective effects of these early life exposures do not last into childhood.
3. Nine-year-old children from lower socio-economic households are less physically active than their peers. Due to their local environment being perceived by both parents and children as unsafe to play in, or due to poor availability of recreation facilities, these children spend more time engaged in sedentary pursuits and less time engaged in physical activity.
4. The households of children with the lowest-quality diets were characterised by low levels of maternal educational achievement, and poor diet-related behaviours, such as skipping breakfast and eating their main meal alone.
5. In Ireland, the local food environment, as measured by the availability of local supermarkets, had little impact on the dietary quality of children, although there was a small effect observed among girls, where better availability of local supermarkets was associated with better-quality diets.
6. Maternal body mass index (BMI) was shown consistently to be the most predictive of the

children's BMI and related behaviours, with the children of overweight or obese mothers far more likely than their peers to be overweight or obese both during infancy and at nine years of age. This points to the importance of the children's immediate environment and the inter-generational transmission of behaviours implicated in obesity, such as poor diet and limited physical activity.

#### 5. What are the recommendations?

This section presents the study recommendations. While childhood overweight and obesity is a multifaceted issue with complex causes, many of the behaviours and exposures implicated are amenable to change. However, in order to address this issue, overweight and obesity must be understood as originating in the way society itself, and its institutions, are organised. Therefore, efforts to prevent its onset must use a multisectoral approach that better empowers individuals to make choices conducive to healthier weight.

##### 1. A greater focus on preventive strategies

The limited success of interventions to date to manage childhood overweight and obesity once it is established suggests that prevention rather than treatment presents the greatest potential to address the problem. Childhood is a critical time to intervene in order to reduce the associated burden on children, parents and health services.

The National Children's Strategy helpfully acknowledged that childhood is a time when the foundations for good adult health are established. Early intervention also offers an opportunity to positively impact on the development of childhood obesity, which in many cases continues into adulthood.

##### 2. Improved engagement with overweight and obese mothers

The identification of overweight and obese mothers, both during and after birth, provides a clear opportunity for health professionals to intervene with a view to addressing the risk of excessive weight gain among infants and children.



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### 3. Improved local environment

One area amenable to environmental policy is that of neighbourhood safety and recreational space for outdoor play. It is clear from the analysis carried out as part of this study that children's physical activity is directly impacted by their local physical environment, and therefore access to safe facilities for outdoor play may encourage physical activity.

This point was raised by the National Taskforce on Obesity, who identified a role in providing opportunities for physical activity for Government departments, agencies, and local authorities (Department of Health and Children, 2005: 82).

### 4. A multisectoral, cross-disciplinary approach, to tackling childhood obesity

Childhood overweight and obesity is a complex issue, with no obvious simple cause or solution. Therefore, attempts by policy-makers to confront the problem must first acknowledge that the development of childhood overweight involves the interaction of a complex set of influencing factors from multiple settings. For this reason, policies to address childhood overweight and obesity must recognise factors beyond personal control.

Acknowledging this then requires that policy-makers do not limit their focus to individual-level behavioural change, but instead target causal mechanisms at multiple levels of influence.

### 6. What is the benefit of this study?

The benefit of this study arises from its highlighting of the unequal distribution of childhood overweight and obesity across a number of socio-economic indicators, and the identification of factors in the child's social and physical environment associated with these disparities.

From the empirical findings presented, it is argued that the origins of obesity lie in the way in which societies are organised, coupled with temporal changes in lifestyle. As such, the increasing prevalence of obesity can be understood to be due to 'lifestyle' rather than any recent changes in the population's genetic make-up or expression.

Furthermore, two potential generative mechanisms by which the unequal distribution of childhood overweight and obesity may be generated were suggested, namely, materialist and psycho-social.

It is hoped that the study contributes to a clearer understanding of the inter-relationship between individual and environmental factors associated with this important issue.