Original Research

Increasing inequality in childhood obesity in primary schools in a northern English town

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ABSTRACT

Objective: To undertake an analysis of National Child Measurement Programme (NCMP) data to quantify the obesity prevalence gap over time between children in primary schools in the most and least deprived areas of Doncaster.
Study design: The research design for this study was retrospective quantitative analysis of secondary data.
Methods: The study undertook secondary analysis of NCMP data on obesity prevalence in children in Reception Year and Year 6 in primary schools in Doncaster for the period 2006–2007 to 2014–2015. Data were combined into three 3-year periods (2006–2007 to 2008–2009; 2009–2010 to 2011–2012; and 2012–2013 to 2014–2015), and schools were grouped by deprivation based on the national Indices of Multiple Deprivation 2015. Analysis was undertaken to assess whether there is a difference in obesity prevalence for Reception Year and Year 6 children in schools in the most deprived areas compared with the least deprived (prevalence gap), over time.
Results: The difference in obesity prevalence between children attending schools in the most and least deprived areas has increased over time. For Reception Year children, the prevalence gap has widened from a difference of 1.01% higher in the most deprived schools in 2006–2007 to 2008–2009 to 3.64% higher in 2012–2013 to 2014–2015. In the same time periods, for Year 6 children, the obesity prevalence gap has also increased over time from 2.82% to 5.08%.
Conclusions: There is inequality in relation to obesity in primary school children in Doncaster with those in schools in the most deprived areas carrying the greatest burden. Research is needed to understand why the plateau seen nationally is not reaching the most deprived children.

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Introduction

Childhood obesity is a high-priority public health area across the UK, with a quarter of 2- to 10-year-olds and a third of 11- to 15-year-olds overweight or obese.[1] The adverse impact on the health, social care and economy are well documented; obesity increases the risk of type 2 diabetes, coronary heart disease, stroke, many cancers and reduces life expectancy.[2,3] Adverse social consequences include social isolation and discrimination.[4] The direct cost to the National Health Service (NHS) in 2006—2007 was estimated to be £5.1 billion,[5] which was 6% of the NHS budget that year. This is expected to double to £10 billion per year by 2050, with wider economic costs, such as loss of productivity, modelled at almost £50 billion per year by 2050.[6]

The prevalence of childhood obesity in England has trebled since the 1980s,[7] reaching a peak of 19% in 2- to 15-year-olds in 2005.[8] Since then prevalence has plateaued. However, this plateau is not uniform across society. National reports in England, using data sourced from the National Child Measurement Programme (NCMP), highlight that the obesity burden is increasing for children from the most deprived areas, and this is increasing over time.[9] This emerging and increasing obesity prevalence gap highlights the growing disparity between the most and least deprived children in society.[10,11]

The NCMP is the national epidemiological tool for monitoring weight in children in England. The programme is not in place in the rest of the UK. It involves all primary school children being measured (weight and height) on starting school at age 4—5 years and leaving school at age 10—11 years to assess whether they are underweight, of normal weight, overweight or obese. The NCMP started in 2006, and this research aimed to analyse 9 years of the data for Doncaster, a northern English town, to assess whether there was a local obesity prevalence gap between the most and least deprived children and to determine what the gap was, using this to inform local policy and practice. This was performed retrospectively, undertaking quantitative analysis of the Health and Social Care Information Centre (HSCIC) data. The HSCIC is the national information, data and IT system provider to the health and care system in England and is now known as NHS Digital.

Doncaster is a metropolitan borough council located in the north of England. It is coterminous with the area Clinical Commissioning Group, the body responsible for commissioning health services. The 2011 national census in the UK recorded the population of Doncaster at 302,400. Doncaster is considered a deprived area, and it ranked 48th most deprived local authority in England (out of a total of 326), according to the English Index of Multiple Deprivation (IMD; 2015).[12]

The objective of this study was to undertake an analysis of NCMP data to quantify the obesity prevalence gap over time between children in primary schools in the most and least deprived areas of Doncaster.

Methods

The research design for this study was retrospective quantitative analysis of secondary data. At the time of the study, there were 9 years of NCMP data available for analysis, from the initial year of the NCMP programme in 2006—2007 to 2014—2015.

Population

Data were analysed for the 2 school years measured by the NCMP, Reception Year (children aged 4—5 years) and Year 6 (children aged 10—11 years) for all primary schools in Doncaster over the 9-year period.

Measures

Body mass index (BMI; weight [kg]/height [m]^2) is the tool used, by the NCMP, to assess whether a child is of healthy weight, overweight or obese. Fixed BMI thresholds such as those used for adults are not used for children because the relationship between a child's BMI and fatness changes over time. Therefore, children's BMI is categorised using variable thresholds that take into account the child's age and sex. These thresholds are derived from a reference population and defined in terms of centile on a child growth reference chart. An individual child's BMI centile is compared with the reference chart to determine whether it is above or below the defined thresholds for healthy weight, overweight or obese. In England, the NCMP used the British 1990 growth reference (UK90) chart to classify children's weight status. For population monitoring purposes, children are identified as overweight if their BMI is above the 85th centile and obese if it is above the 95th centile of the growth reference chart, according to their sex and age. Data for children classified as obese were analysed at primary school level to identify obesity prevalence by school on starting (Reception Year) and leaving (Year 6) primary school.

Schools were organised into quintiles of deprivation, for analysis of obesity prevalence in relation to deprivation, by using the IMD 2015[12] score assigned to the school. The IMD is a composite measure of deprivation based on information from the following domains: income; employment; health and disability; education, skills and training; housing and services; crime and living environment. It is based on the characteristics of a geographical area of residence rather than traits of the individual. People are divided into five equal-sized bands (quintiles) based on IMD score of their area of residence (postcode) ranging from the least to the most deprived fifth of the population. It is based on a geographical unit called a Lower Super Output Area (LSOA) with an average population of 1500.[13]

All primary schools in Doncaster in operation during the period 2006—2007 to 2014—2015 were ranked into quintile of deprivation using the IMD 2015 national cut-offs. This was performed by using the school's postcode to identify in which LSOA it resided, and the associated IMD score from the 2015 Indices of Deprivation was then assigned. The schools were organised into quintiles of deprivation with 1 being the most deprived 20% of LSOAs and 5 being the least deprived 20% of LSOAs nationally.

Statistics

NCMP data were provided by the HSCIC after permission was sought by Doncaster Council. The data comprised nine data