

# Increasing inequality in childhood obesity in primary schools in a Northern English town

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## Introduction

We present analysis of National Child Measurement Programme (NCMP) data for primary schools in Doncaster from 2006/07 to 2014/15 illustrating and quantifying the obesity prevalence gap over time between children in primary schools in the most and least deprived areas of the borough.

## Method

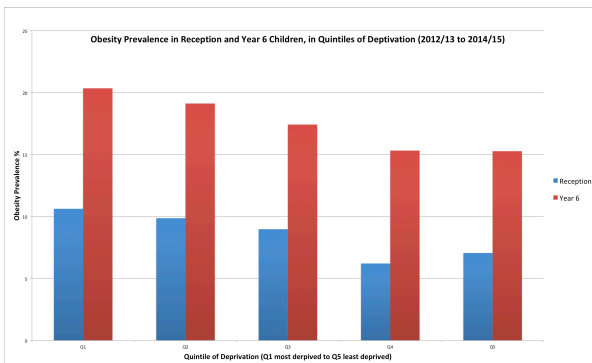
The study undertook secondary analysis of NCMP data on obesity prevalence in children in Reception Year (aged 4-5 years) and Year 6 (aged 10-11 years) in primary schools in Doncaster for the period 2006/7 to 2014/15. Data was combined into three three-year periods (2006/07 to 2008/09; 2009/10 to 2011/12; and 2012/13 to 2014/15) and schools organised into quintiles of deprivation based on the national Indices of Multiple Deprivation (IMD) 2015 score assigned to the school. 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 to the least deprived (prevalence gap), over time.

## Results

The total number of children measured over the time period was 57,510 (124 schools); 52% pertaining to Reception Year children and 48% pertaining to Year 6 children. Participation in the NCMP in the town is similar to the national participation rate and has gradually increased over time plateauing at approximately 94%.

Obesity prevalence has increased modestly in Reception Year and Year 6 from the baseline year of 2006 to 2014. The prevalence of obesity increases with increasing deprivation for both year groups (see figure 1). For all quintiles the prevalence of obesity doubles from entry to school to leaving school. The obesity prevalence gap between the most (quintile 1) and least (quintile 5) deprived has increased over time.

Figure 1:



## Obesity Prevalence Gap

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 2006/07 - 2008/09 to 3.64% higher in 2012/13 - 2014/15 (figure 2). In the same time periods, for Year 6 children, the obesity prevalence gap has also increased over time from 2.82% to 5.08% (figure 3).

Figure 2:

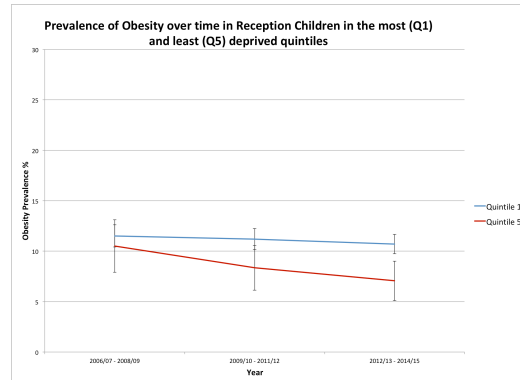
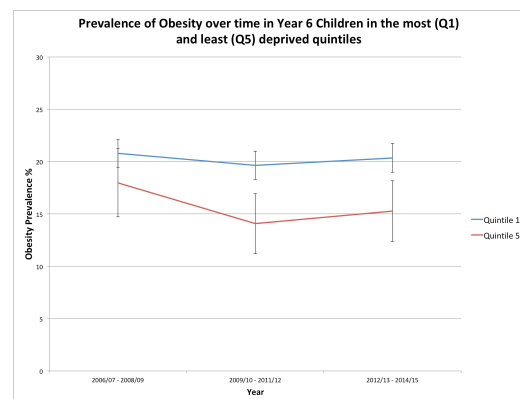


Figure 3:



## Discussion

The results highlight a widening obesity prevalence gap between the most and least deprived children and this is as expected from the literature and national data analysis.<sup>1,2</sup> The doubling in obesity prevalence from school entry to school exit is also akin to national trends.<sup>3</sup>

For Reception Year children the prevalence gap between the most and least deprived areas has increased from 1.01% in the first three-year period (2006/07-2008/09) to 3.64% in the latest time period (2012/13 to 2014/15), an increase of 2.63%. This is greater than the England prevalence gap increase of 0.09 (4.6% in 2007/08 to 5.5% in 2014/15 between the least and most deprived deciles).<sup>3</sup> Whilst recognising that the national figures are annual and use deciles whereas the figures in this study were in three-year periods and based on quintiles, it suggests that locally there may be a greater obesity prevalence gap over time for Reception Year children compared to England. This highlights the need to focus weight management initiatives in schools in the most deprived quintile, where the data highlights a significant burden and growing social inequality locally.

For Year 6 children the obesity prevalence gap has increased over time by 2.26%; from 2.82% in the first three-year time period to 5.08% in the latest three-year time period and this is lower than the England gap of 3.1 (8.9 to 12%).<sup>3</sup> Whilst it is difficult to compare these figures they suggest that the prevalence gap over time in Doncaster for Year 6 children is no worse than that found nationally unlike the Reception Year.

The study limitations are the use of an IMD score assigned to a school rather than individual children as the latter is a much more precise measure of deprivation. Also the use of compressed data (three by three-year periods) to increase the robustness of the data and limit variation due to small numbers (particularly as the numbers were considerably smaller in the least deprived quintile) loses some sensitivity in analysing trends over time. With each statistic including data from a number of years it can take longer to detect any significant trends.<sup>4</sup>

The strengths of the study are the use of national epidemiological data and using it in a robust way to undertake small area analysis. The sample size of 57,510 and time period of 9 years are suitably large for analysis.

## Highlights

There is inequality in relation to obesity prevalence in primary school children in Doncaster.  
The obesity prevalence gap between children in the most and least deprived quintile of schools is increasing over time.  
Small area analysis of national epidemiological data can be used to inform local action.  
Local public health policy and practice need to ensure that weight management initiatives are focused in schools in the most deprived areas.

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