

Obesity Knowledge and Intelligence

Introduction

In children the relationship between BMI and adiposity varies with age and sex, so BMI thresholds are usually defined in terms of a specific centile on a growth reference, however there is currently no universal definition of severe paediatric obesity.

In England the UK90 growth charts are frequently used to define paediatric weight status according to age and sex, with the highest centile line being the 99.6th (a visual representation of children falling into this category is shown in Figure 1)[1]. The International Obesity Task Force (IOTF) has also recently published a definition for morbid obesity in children that correspond to an adult BMI of 35 [2].

International data suggest that children suffering from severe obesity are at increased risk of ill health and are more likely to suffer from severe obesity in adulthood [3,4]. These children may therefore require more specialised weight management strategies, yet there remains a lack of data on the extent of this problem.

Methods

Data for this study were taken from the National Child Measurement Programme (NCMP) from school years: 2006/07-2011/12.

The NCMP was established in 2006 and annually collects measured height, weight, sex, age, ethnicity and postcode data from all children in Reception (ages 4-5 years) and Year 6 (ages 10-11 years), from every maintained school in England (it does not include data from privately funded or special needs schools).

Results

Table 1: Prevalence of severe obesity by international and UK90 proposed definitions. National Child Measurement Programme 2011/12

Sex	Boys				Girls			
	4-5		10-11		4-5		10-11	
	%	n	%	n	%	n	%	n
IOTF morbid obesity	1.5%	4427	0.9%	2245	1.9%	5365	1.0%	2467
≥99.6th centile UK90	2.4%	7034	4.1%	10345	2.0%	5450	2.9%	7053
≥99.87th centile UK90	1.6%	4486	1.5%	3890	1.2%	3218	1.1%	2709
≥99.98th centile UK90	0.7%	2153	0.2%	428	0.5%	1254	0.2%	384

The latest (2011/12) prevalence figures for English school children who fall on or above the 99.6th centile of the UK90 growth charts, and met the new IOTF morbid obesity classification are shown in Table 1. Two further categories for very severe obesity, based on the 99.87th and 99.98th centiles of the UK90 growth charts are also shown. The two higher thresholds equate to adult BMI (at age 18) of 35kg/m² and 40kg/m² respectively.

Prevalence of weight extremes are shown in Figure 2 and demonstrate that:

- there has been a significant increase in Year 6 severe obesity prevalence
- severe obesity is significantly more prevalent in boys than girls
- severe obesity is significantly more prevalent in Year 6 than Reception
- severe obesity is significantly more prevalent than severe underweight.



Figure 1: Visual representations of a 4-5 year old girl and boy with severe obesity (BMI ≥ 99.6th UK90 centile).

Kindly provided by the NPRI funded Map Me Study team at Newcastle University. © Newcastle University 2013

Figure 2: Prevalence of weight extremes: severe obesity: ≥99.6th centile, severe underweight: ≤0.4th centile, using the UK90 growth charts. Data source: National Child Measurement Programme 2006/07-2011/12

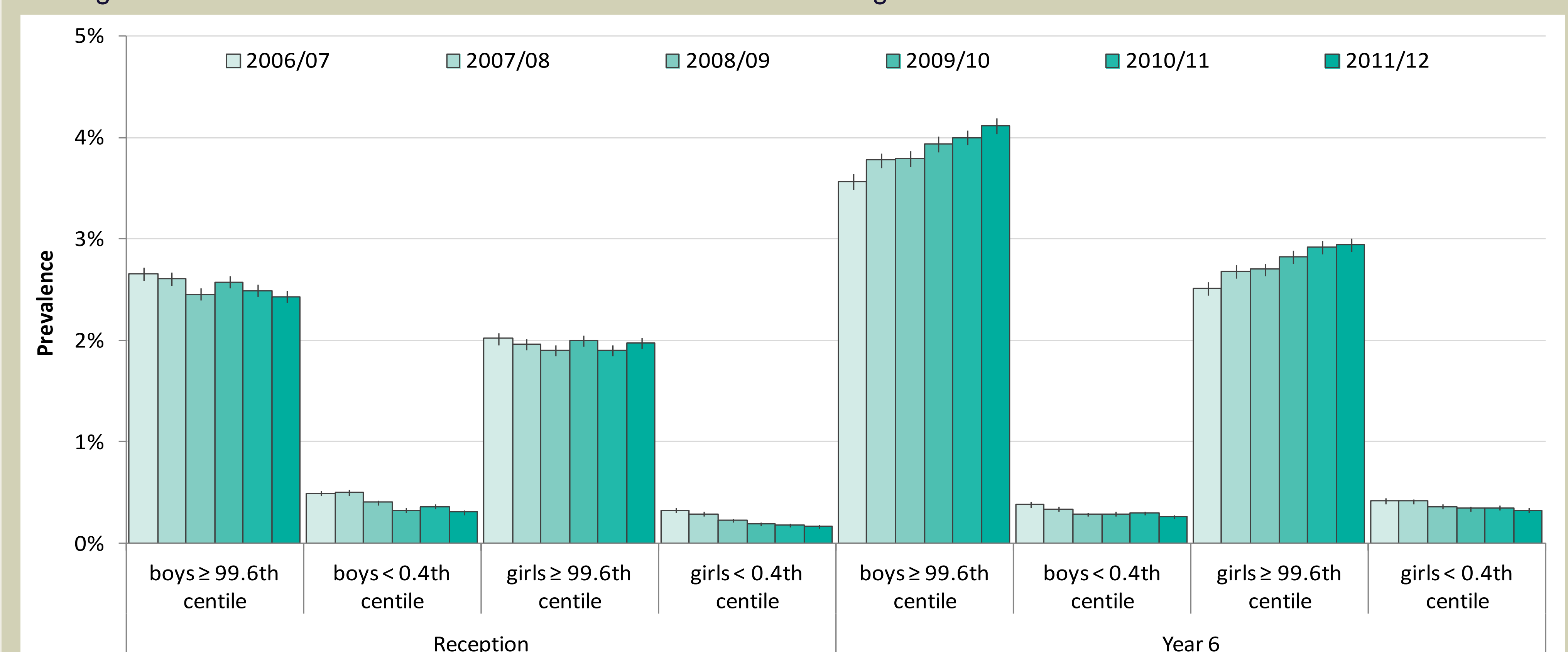
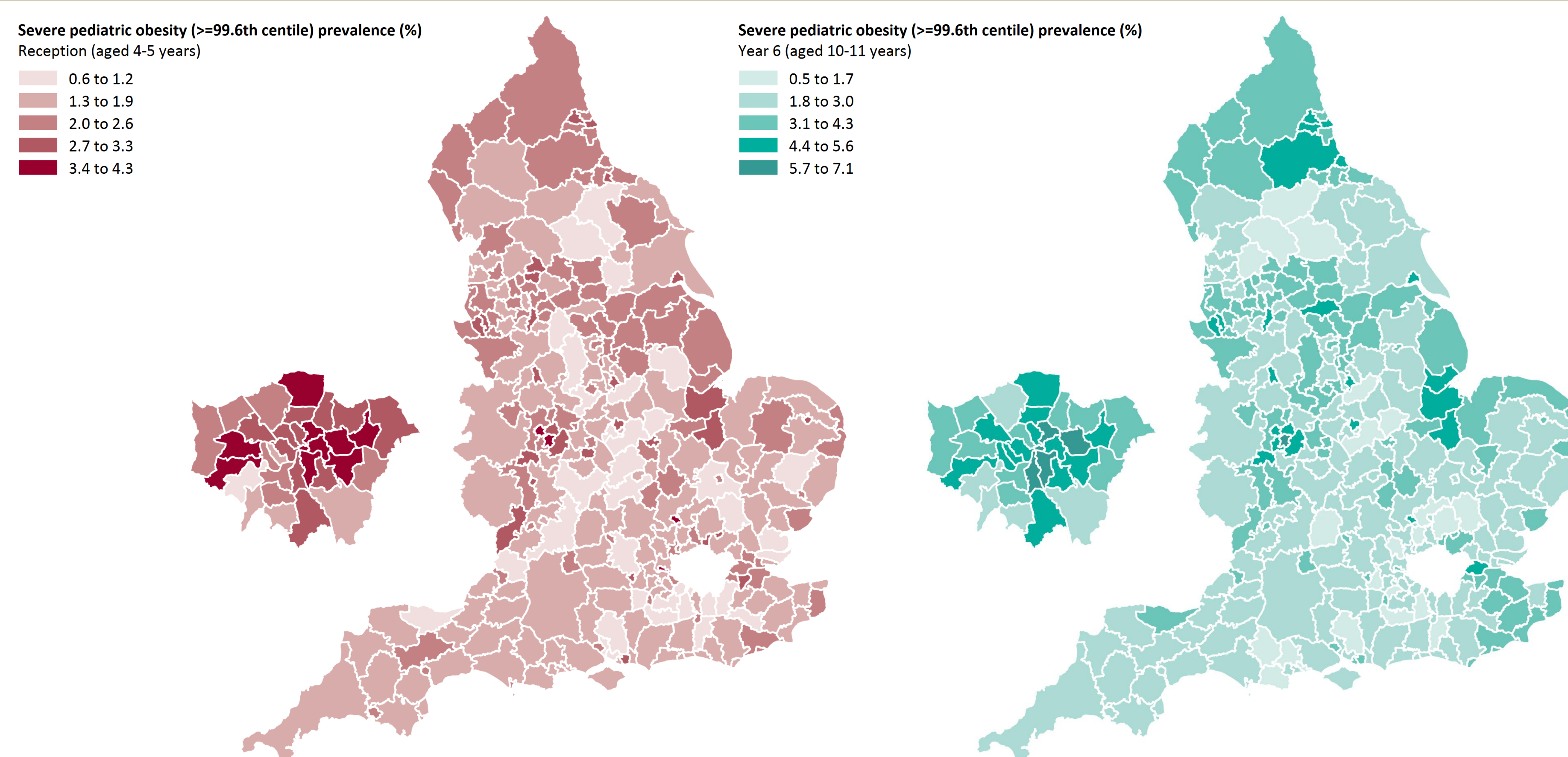


Figure 3: Geographical variation in severe obesity prevalence for 4-5 year old and 10-11 year old children.



Data source: National Child Measurement Programme 2009/10-2011/12

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Over the last six years the NCMP reported an annual mean of 3,187 severely underweight children and an annual mean of 27,655 severely obese children.

In addition to the differences in severe obesity between age and sex, there is also significant variation across the country (Figure 3).

Using combined data from the last three years, prevalence rates of severe obesity across English Local Authorities vary from 0.7% to 4.2% for Reception and 0.5% to 7.1% for Year 6.

Discussion

This study should help to raise awareness of the prevalence of severe obesity and support provision of appropriate services.

The presented figures may underestimate the prevalence of severe obesity. The most likely reason for this is that analyses of previous years data, and extensive anecdotal evidence, suggest that heavier children are more likely to opt out of the measurement programme.

Although the percentages for severe obesity remain small, they still represent a very large number of children, many of whom are likely to require top tier service provision.

References

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3. Ice CL, Murphy E, Cottrell L, Neal WA. Morbidly obese diagnosis as an indicator of cardiovascular disease risk in children: results from the CARDIAC Project. *Int J Pediatr Obes*. 2011; **6**(2):113-9.
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