

# Child overweight and obesity

## Initial findings from the Millennium Cohort Study Age 11 survey



### Introduction

Childhood overweight and obesity is a growing concern in the majority of industrialised nations. Children who are overweight or obese face an increased risk of many health problems, including asthma, cardiovascular disease and type 2 diabetes. Childhood overweight and obesity is also associated with psychological problems such as low self-esteem and depression, and can have a major and enduring impact on an individual's life.

The Millennium Cohort Study (MCS) has gathered information on the physical development and growth of the children at several points in time, making it a

unique, nationally-representative resource for the study of childhood overweight and obesity. The multi-topic nature of the study allows researchers to investigate factors that influence children's physical development and could inform policy to promote healthy growth.

This briefing summarises the measures of physical and pubertal development that were collected in the Age 11 survey of the MCS. It looks at how levels of overweight and obesity among the MCS children have changed since earlier surveys and presents findings on the links between weight and happiness, self-esteem and the onset of puberty.

### MCS Age 11 survey

The Millennium Cohort Study's (MCS) survey of 11-year-olds took place between January 2012 and February 2013. Trained fieldworkers conducted 13,287 interviews with the children and their parents/guardians. Data from this survey and previous MCS surveys are available to download from the UK Data Service.

### Key findings

- Twenty per cent of the MCS children were obese at age 11 and a further 15 per cent were overweight.
- The proportion of children who were an unhealthy weight was significantly greater at age 11 than at previous MCS surveys. At age 7, 25 per cent of children were either overweight or obese compared to 35 per cent by age 11.
- Overweight and obesity are both associated with levels of happiness, self-esteem and the onset of puberty.



# Findings

## Overweight and obesity at age 11

By age 11, boys in the MCS had reached an average height of 1.46 metres (4ft 9ins), while girls were slightly taller at 1.47 metres (4ft 10ins). Girls also weighed slightly more, with an average weight of 42kg (6st 9lbs) compared to 41kg (6st 6lbs) for boys.

Based on their body mass index (BMI), 15 per cent of 11-year-olds were overweight and a further 20 per cent were obese. While the same proportion of boys and girls were overweight (15%), the obesity level was slightly higher among boys (21%) than girls (19%).

The prevalence of overweight and obesity varied significantly by country in the UK. Forty per cent of 11-year-olds in Wales and Northern Ireland were overweight or obese compared to 35 per cent in England and 33 per cent in Scotland.

'Forty per cent of children in Wales and Northern Ireland were overweight or obese at age 11 compared to 35 per cent in England and 33 per cent in Scotland.'



## Body Mass Index

Body Mass Index (BMI) measures the ratio between height and weight. It is calculated by dividing weight in kilograms by squared height in metres (kg/m<sup>2</sup>).

In children, the relationship between BMI and overweight changes over time, so the British 1990 growth reference (UK90)<sup>1</sup> is used to define overweight and obesity in relation to their age and sex. Children's BMI is classified as overweight (including obese) when it is in the top 15 per cent of the UK90 growth reference, and as obese when it is in the top 5 per cent.

<sup>1</sup> For more information about the British 1990 growth reference (UK90) please visit the Public Health England website.

► **Table 1: Weight status by gender and country at age 11**

		Not overweight %	Overweight %	Obese %	Total %
Gender	Male	63.6	15.4	21.1	100
	Female	66.3	14.9	18.8	100
Country	England	65.2	15.2	19.7	100
	Wales	59.7	17.2	23.2	100
	Scotland	66.9	14.1	19.0	100
	Northern Ireland	60.1	15.8	24.1	100

► **Table 2: Weight status at age 11 by parents' qualifications and mother's weight**

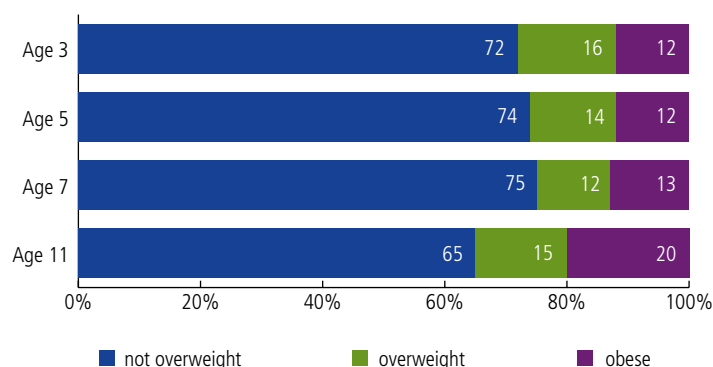
		Not overweight %	Overweight %	Obese %	Total %
Parents' highest qualifications	None	61.2	13.6	25.2	100.0
	NVQ1 (e.g. GCSE D-G)	63.0	12.7	24.3	100.0
	NVQ2 (e.g. GCSE A-C)	62.8	15.3	21.9	100.0
	NVQ3 (e.g. A-levels)	64.9	16.9	18.2	100.0
	NVQ4 (e.g. Higher National Diploma)	69.6	16.0	14.4	100.0
	NVQ5 + (e.g. Degree)	70.4	15.1	14.5	100.0
Natural mother's weight status	Normal	76.0	12.5	11.5	100.0
	Overweight	61.7	16.9	21.5	100.0
	Obese	45.6	18.5	35.9	100.0

► **Table 3: Self-esteem and weight status at age 11**

	Not overweight %	Overweight %	Obese %	Total %
Normal range self-esteem	93.1	91.2	89.7	92.1
Low self-esteem	6.9	8.8	10.3	7.9
Total %	100	100	100	100



► **Figure 1: Weight status of MCS children ages 3 to 11**



### Links to parents' qualifications and weight

There was a clear link between children's weight at age 11 and their parents' level of education. Twenty-five per cent of children whose parents had no educational qualifications were obese and a further 14 per cent were overweight. In contrast, 15 per cent of children who had at least one parent with a degree were overweight and the same proportion was obese. However, no link was found between children's weight and their parents' occupational social class.

Overweight and obesity at age 11 were strongly associated with mother's weight. Children with obese mothers had the highest levels of overweight (19%) and obesity (36%), while those with mothers who were not overweight were least likely to be overweight (13%) or obese (12%) themselves.

### Longitudinal patterns of childhood weight

Children's weight has been measured in the MCS surveys at ages 3, 5, 7 and 11. Although there was a slight decrease in the proportion of children who were overweight between ages 3 and 7, levels of both overweight and obesity increased by age 11. At age 7, 25 per cent of MCS children were either overweight (12%) or obese (13%). However, by age 11 this figure had risen to 35 per cent (15% overweight and 20% obese).

Overall, almost half (49%) of MCS children were classified as overweight or obese in at least one of the four surveys. Four per cent of children were overweight at all 4 points in time, and 1 per cent remained consistently obese. The weight status of 44 per cent of children has changed at some point since the first survey.

'At age 7, 25 per cent of MCS children were either overweight or obese but by age 11 this figure had risen to 35 per cent.'

Twelve per cent of those who were not overweight at age 7 were overweight by age 11, and 6 per cent were obese. Among those who were obese at age 7, 84 per cent remained obese at age 11 while 12 per cent were overweight and only 4 per cent achieved a healthy weight.

'Eleven-year-olds who were overweight or obese had lower self-esteem than those who were not.'

### Weight, wellbeing and self-esteem

There was a significant association between weight and how both boys and girls felt about the way they looked. Those who were obese were less likely to be 'completely happy' with the way they looked than those who were classified as either overweight or not overweight. They were also slightly more likely to say they were 'not happy at all' with their appearance.

For girls, there was a link between weight and how they felt about life as a whole. Girls who were not overweight were more likely to report being 'completely happy' than those who were classified as obese. No association was found for boys.

Eight per cent of children in the Age 11 survey were assessed as having low self-esteem. Fewer children who were not overweight had low self-esteem (7%) than those who were overweight (9%) or obese (10%).

### Puberty and weight

In the Age 11 survey, parents were asked to report on their children's pubertal development, including features such as growth spurts, facial and body hair, voice changes, breast development and menstruation. Their reports indicate that girls were at a more advanced stage of development than boys at age 11.

Forty-one per cent of parents felt that their sons had definitely experienced a growth spurt, but facial hair development and voice changes were still quite rare at this age. More than half of parents (56%) said that their daughters had experienced a growth spurt and 10 per cent said they had begun menstruation.

Overall, children who were obese or overweight were likely to be at a more advanced stage of pubertal development than those who were not. Weight status was significantly associated with all measures of pubertal development measured in the Age 11 survey.

'Children who were overweight or obese at age 11 were more likely to experience the onset of puberty earlier than those who were not.'





## Conclusions

The findings reported in this briefing reveal significant associations between levels of obesity and overweight in children and a range of background characteristics such as country of residence, parental education and mother's weight. They also indicate that childhood obesity and overweight is linked to wellbeing and self-esteem, as well as the onset of puberty.

In addition, the results show a worrying increase in the proportion of children in the millennium generation who have entered the unhealthy weight categories. Thirty-five per cent were overweight or obese at age 11, compared to 25 per cent at age 7.

## Future research

This briefing highlights the value of the MCS for addressing issues relating to child health and, in particular, for advancing our understanding of the 'obesity epidemic'.

Future questions that could be addressed using MCS data include: Do low levels of happiness and self-esteem result in higher levels of overweight and obesity or does the association work the other way round? What are the reasons behind the sharp increase in overweight and obesity among the MCS children between the ages of 7 and 11?

Further research could also explore the implications of the association between obesity and advanced puberty, and whether early pubertal development is a negative experience for overweight and obese children.

---

## About the Millennium Cohort Study

The Millennium Cohort Study is following around 19,000 children born in the UK between September 2000 and January 2002. The study is funded by the Economic and Social Research Council and government departments, and is managed by the Centre for Longitudinal Studies at the Institute of Education, London.

The five surveys of cohort members conducted so far – at ages 9 months and 3, 5, 7 and 11 years – have built up a uniquely detailed portrait of the children of the new century. The study has collected information on diverse aspects of their lives, including behaviour, cognitive development, health, schooling, housing and parents' employment and education.

The MCS has had a significant impact on UK policy, in areas such as breastfeeding, immunisation and child poverty. It will continue to provide a vital source of evidence for policymakers addressing social challenges for many years to come.

---

## Further information

The material in this briefing has been drawn from Connelly, R. and Chatzitheochari, S. (2014) Physical development. In Platt, L. (ed) *Millennium Cohort Study Age 11 Survey Initial Findings*. London: Centre for Longitudinal Studies.

---

## Contact

Centre for Longitudinal Studies  
20 Bedford Way, London WC1H 0AL  
**Tel:** +44 (0)20 7612 6875  
**Email:** [clsfeedback@ioe.ac.uk](mailto:clsfeedback@ioe.ac.uk)  
**Web:** [www.cls.ioe.ac.uk](http://www.cls.ioe.ac.uk)  
**Twitter:** @CLScohorts



**Centre for Longitudinal Studies**  
Following lives from birth and through  
the adult years – [www.cls.ioe.ac.uk](http://www.cls.ioe.ac.uk)

CLS is an ESRC resource centre based at  
the Institute of Education, University of London

