

Obesity prevalence and its inequality from childhood to adolescence

Initial findings from the Millennium Cohort Study Age 17 Survey

The past couple of decades have witnessed an increased policy focus on obesity among children and adolescents. Recent government policies, including a sugar tax on soft drinks,¹ alongside high profile public health campaigns, including Jamie's plan to tackle childhood obesity, are amongst several efforts to help address the obesity epidemic. There is no denying the extent of the issue in the UK today, where it is currently estimated that one in three children leave primary school either overweight or obese.² Children from more disadvantaged backgrounds are disproportionately affected, with important implications for the transmission of disadvantage to the next generation.³ These stark statistics represent a dramatic rise on previous generations – even very recent ones. For instance, the estimated probabilities of overweight or obesity in cohorts born after the 1980s were 2–3 times greater than those born before the 1980s.⁴ Further, childhood obesity is a strong risk factor for

adult obesity.⁵ The long-term effects on physical and psychological health are significant for the individual and their families, but also for the NHS and health and social care more generally, making them a priority focus for public policy.⁶

In 2018-19, before the COVID-19 pandemic struck, we collected data from participants of the Millennium Cohort Study (MCS) when they were aged 17. This included measured height and weight. This report focuses on excess weight at age 17, presenting prevalence of obesity, overweight, normal weight and underweight. Examining also previous measures collected from the cohort since age 3, it highlights stark inequalities by family socioeconomic circumstances. It underlines the strong persistence of excess weight throughout childhood and adolescence, with one third of a whole generation either overweight or obese as they enter their prime adult years.

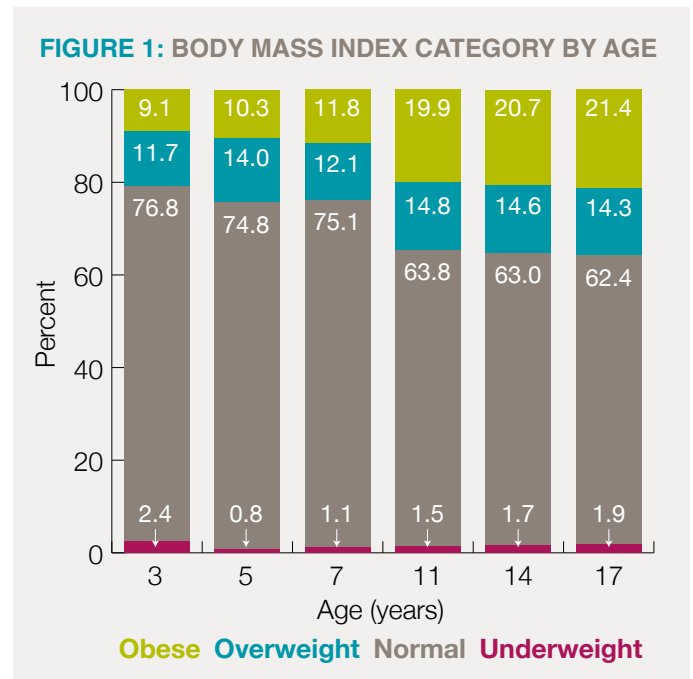
Key findings

- Obesity is persistently high for the generation born at the turn of the century, with already high rates of almost 9.1% at age 3, reaching a peak of 21.4%, or more than two in every ten young people, by age 17. Rates of overweight have also been high throughout their formative years, reaching 14.3% at age 17. Together, this means that more than one in three adolescents are entering adulthood with excessive weight. This high prevalence was found in both boys and girls.
- Young people from relatively low income backgrounds are at substantially higher risk of being obese. At age 17, 27.6% of those from the lowest income quintile classify as obese, with the prevalence progressively decreasing across the income distribution, to around 13.7% of those from the richest households.
- The socioeconomic differences in obesity prevalence become manifest from late childhood (age 11) onwards, prior to which the socioeconomic gaps are much smaller.

Prevalence of underweight, overweight and obesity

This is the first report using data from MCS to chart prevalence in each of these categories (obesity overweight, normal weight, underweight) throughout childhood and adolescence. It then presents differences by sex and socioeconomic position. These results are shown in Figure 1, and tabulated in Table 1 of the Appendix. We used UK90 cut points in our main analyses (see Methods box on page 3); results using the International Obesity Task Force (IOTF) cut points are shown in Table 2 of the Appendix.

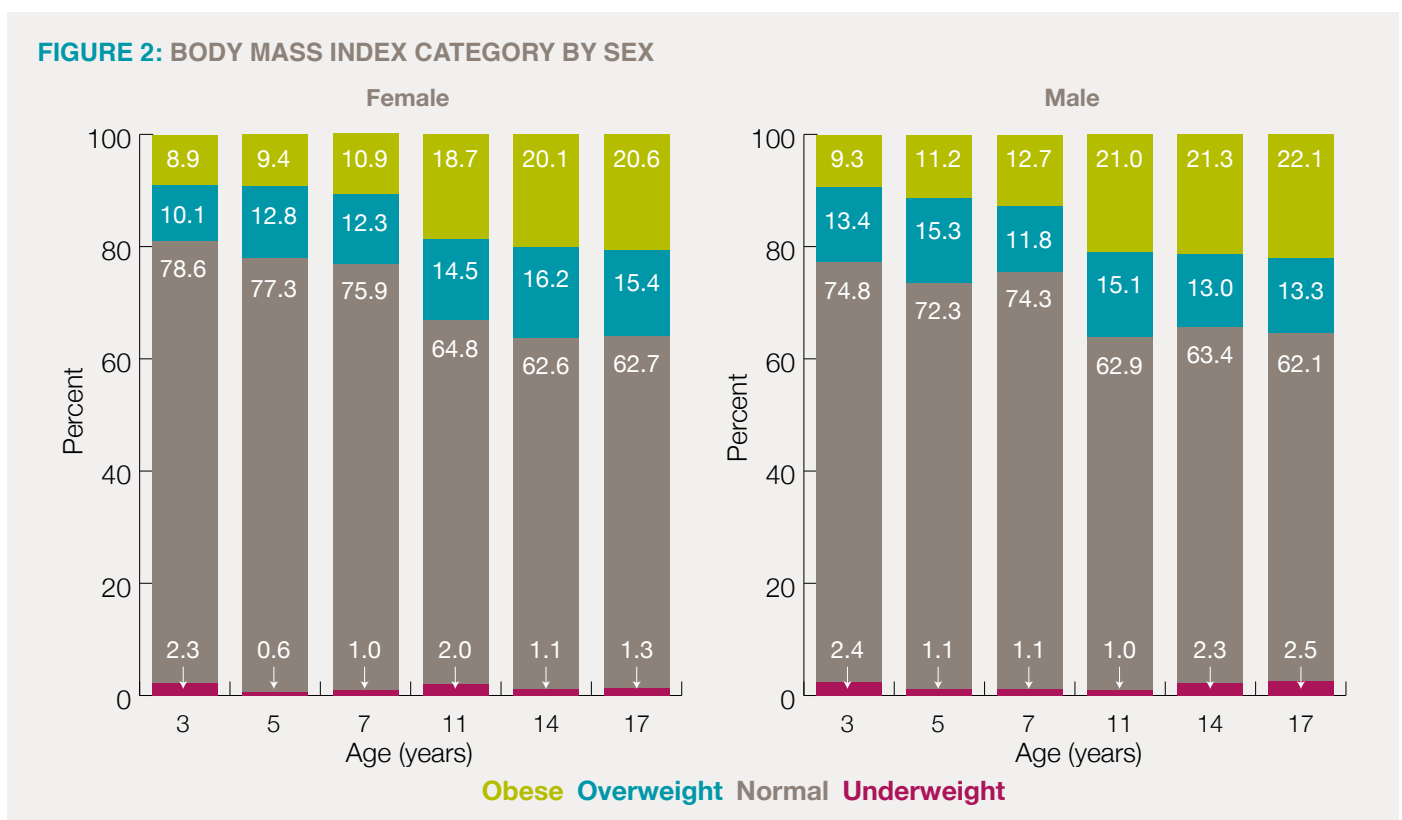
Overall, the prevalence of overweight at age 17 is 14.3% (95% confidence interval: 13.1, 15.7) and of obesity is 21.4% (19.8, 23.1). These proportions are very similar to when participants were previously measured at age 14, when the prevalence of overweight was 14.6% (13.8, 15.4), and of obesity 20.7% (19.6, 21.8). The proportion of participants in the underweight category is also similar, at 1.7% (1.44, 2.11) at age 14 and 1.9% (1.53, 2.43) at age 17.



Differences by sex

Comparing prevalence by sex, we observe high levels of obesity in both sexes, with a sharp increase between ages 7 and 11 for both, which remain high thereafter.

By age 17, 20.6% (18.5, 22.9) of females and 22.1% (19.7, 24.7) of males were obese. Prevalence at all ages is shown in Figure 2 and in the Appendix.

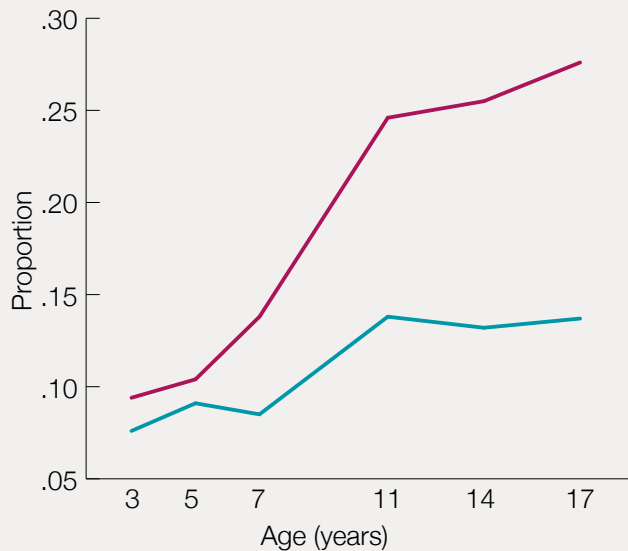


Differences by household income

An examination of the prevalence of excess weight at age 17 by household income reveals little evidence for differences in overweight prevalence across income quintiles, yet substantial differences in obesity prevalence. Those in lower income groups had progressively increased risk of obesity. 27.6% (22.2, 33.7) and 28.9% (24.2, 34.1) of those in the lowest and second lowest quintiles respectively are estimated to be obese, compared with 13.7% (12.1, 15.5) in the highest income quintile.

Looking across childhood, there is evidence that the socioeconomic gap opens up most starkly from age 11 onwards. This is shown in Figure 3, which highlights the fanning out of obesity rates across childhood, between the richest and poorest, with a 13.9 percentage point difference in obesity rates by age 17. Put differently, the prevalence in obesity amongst the poorest was around twice that of the richest, at age 17.

FIGURE 3: OBESITY BY INCOME QUINTILE



Lowest income quintile Highest income quintile

Methods

Height was measured using a Leicester height measure stadiometer. Weight and body fat measurements were taken using Tanita scales (BF-522W). All interviewers were trained and accredited in using this equipment.

Body mass index (BMI) is constructed as weight divided by height squared. Participants are normally classified as overweight or obese by comparing their BMI with a reference population that describes

the distribution of BMI within a population by age and sex. Weight classifications are based on the UK90 cut-offs, which are more widely used in the UK. Classifications based on the international IOTF classifications are contained in the Appendix.

Sex at birth was used. Income was based on household income at baseline (age 9 months), which has been adjusted for household size (using OECD schema) and classified into quintiles.

Conclusion

In 2018-19, just over one in three 17-year-olds in the UK were either overweight or obese, with the prevalence of obesity, at one in five, higher than the prevalence of overweight, at one in seven. These stark figures are considerably higher than previous generations⁴ and underscore the importance of tackling this major unresolved public health problem in order to prevent future health and social impacts on this and future generations. Concerns are exacerbated in light of emerging evidence that COVID-19 disproportionately affects those with excess weight.⁷ The stark socioeconomic inequalities in obesity that emerge by late childhood — with those from

the poorest backgrounds having double the risk of obesity as the richest adolescents — emphasises the importance of tackling the obesity epidemic early on in life in order to reduce future health inequalities.

Our findings highlight the need for bold and ambitious policy action to address and rebalance the environment which has undoubtedly contributed to such high obesity levels. While the exact causes of the obesity epidemic continue to be debated, this is likely to require action on the food environment and continued investment in public health.

Acknowledgements

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This briefing is one of a series on different topics, based on the most recent MCS data.

Contact

✉ clsfeedback@ucl.ac.uk
🖱 www.cls.ucl.ac.uk
🐦 @CLScohorts

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About the Millennium Cohort Study

The Millennium Cohort Study (MCS) is following the lives of 19,517 children born across England, Scotland, Wales and Northern Ireland in 2000-02.

MCS provides multiple measures of the cohort members' physical, socio-emotional, cognitive and behavioural development over time, alongside detailed information on their daily life, behaviour and experiences.

There have been seven main sweeps of MCS to date, at ages 9 months, 3, 5, 7, 11, 14 and 17 years. Additionally, cohort members are taking part in an online survey across the five British cohorts during the COVID-19 pandemic, providing vital data on how the pandemic is affecting this generation.