

Why are disadvantaged adults more likely to be obese?

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Article:

Obesity at the individual level is a medical problem, but the rapid rise in global obesity is a policy problem. Research on US data shows that the obesity is inversely related to a variety of measures of social and economic advantage. One important factor is years of maternal education, but much of the link between socioeconomic factors and obesity remains unexplained.

Obesity is a major social and public health issue – one that policy-makers around the world cannot avoid. Obese adults are at relatively high risk of premature death and health problems like diabetes, gallbladder disease, coronary heart disease, high cholesterol, hypertension and asthma. Excess weight reduces the quality of life, and results in productivity losses due to disability, illness and premature mortality. All of these problems raise medical expenditures and place stress on the health care system.

The rise in excess weight has been widely documented for both adults and children in the United States and obesity is growing rapidly throughout much of the world. For example, 32% of U.S. adults were obese in 2003-2004 compared to just 15% in 1976-1980.^{1,2} It is also a problem in Europe as the table shows.

Adult obesity in the European Union (EU27)

Country	Year of data	Males obesity% BMI \geq 30	Females obesity% BMI \geq 30
Austria	2005/6	23.3	20.8
<i>Belgium (self report)</i>	<i>2004</i>	<i>11.9</i>	<i>13.4</i>
<i>Bulgaria (self report)</i>	<i>2001</i>	<i>11.3</i>	<i>13.5</i>
Cyprus	1999/2000	26.6	23.7
Czech Republic	1997/8	24.7	26.2
Denmark (self report)	2001	11.8	12.5
England	2005	23.1	24.3
Estonia (self report)	2004	13.7	14.4
Finland (self report)	2005	14.9	13.5
France (self report)	2006	11.8	13
Germany (self report)	2002/3	22.5	23.3
Greece (ATTICA)	2001/2	20	15
Hungary	1992-4	21	21.2
Ireland	1997-9	20.1	15.9

Italy	2003	9.3	8.7
Latvia	1997	9.5	17.4
Lithuania (self report)	2002	16.4	15.8
Luxembourg		15.3	13.9
Malta (self report)	2003	22.9	16.9
Netherlands	1998-2002	10.4	10.1
Poland	2000	15.4	18.9
Portugal	2003/4	14.5	14.6
Romania (self report)	2000	7.7	9.5
Slovakia	1992-9	19.3	18.9
Slovenia (self report)	2001	16.5	13.8
Spain	1990-2000	13.4	15.8
Sweden (Gotebourg)	2002	14.8	11

Source: [International Association for the Study of Obesity](#)

Note: Age range and year of data in surveys may differ. With the limited data available, prevalence are not age-standardised. Self reported surveys may underestimate true prevalence. Sources and references are available from obesity@iaso.org.

The prevalence of obesity is not evenly distributed across the population, but rather is inversely related to a variety of measures of social and economic advantage. For instance, rates of obesity are relatively high for nonwhites and those with low levels of income or education. Such patterns are consistent with evidence that high socioeconomic status adults are healthier than their less advantaged peers. The reasons for this correlation are difficult to identify.

Socioeconomic status certainly may affect body weight directly. For instance, the poor may more easily cover caloric requirements by purchasing relatively low-cost, high-calorie products. But causality can run the other way as well. Heavier individuals may be penalised in the labour market – for example by receiving lower wages – implying that causation runs from obesity to socioeconomic status rather than in the reverse direction. Of course common third causes, so-called confounding factors, (such as discount rates) could determine both socioeconomic status and body weight.

Some investigators have focused on socioeconomic-status health gradients among youths as a promising method of identifying causal effects of socioeconomic status on health. Examining the young has two advantages. First, it seems unlikely that health could significantly affect socioeconomic status, since the latter is largely determined by education and economic circumstances of the parents. Second, although omitted factors transmitted across generations (such as genetics) could play a role, the influence of other potential confounders (like discount rates) would not be expected to affect socioeconomic status until later in life. Of particular relevance is research by Anne Case, Darren Lubotsky and Christina Paxson indicating that the link between socioeconomic status and health “rotates” (steepens) as individuals move from infancy through late adolescence.³ However, we do not fully understand whether the relationship rotates because disadvantaged individuals are subjected to a greater number of deleterious health events or because they are more adversely affected by given shocks.

Investigating how obesity changes over the lifecycle, and how this evolution differs with socioeconomic status, is important in its own right. Moreover, there are at least three reasons why such an examination of body weight

is also particularly useful for identifying sources of age-related changes in socioeconomic-status health disparities. First, as mentioned, obesity is an important health risk that is rapidly increasing over time. Second, changes in body weight are easily observable, whereas many health indicators (such as overall health status or specific medical conditions) are likely to be measured with greater error or require interaction with the medical system for diagnosis. Third, obesity generally develops over a lengthy period of time – since body weight is a stock resulting from flows of caloric intake and expenditures – and so may reflect an accumulation of the effects of SES differences. Consistent with this, excess weight during childhood, particularly in late adolescence, is a strong predictor of adult obesity.

In an attempt to examine these issues, Charles Baum and I used data from the National Longitudinal Survey of Youth to investigate three relationships:

How body weight changes with age for a US cohort moving through early adulthood.

Here we find that body mass index (BMI) – defined as weight in kilograms divided by height in meters squared – and obesity prevalence rise as individuals transition from early to middle adulthood. The econometric estimates indicate that BMI rises by about 0.12 kg/m² and obesity prevalence by around 0.6 percentage points per year of age for both men and women.

Socioeconomic-status differences in this age-obesity gradient.

Excess body weight is found to be inversely related to socioeconomic status at all observed points of the lifecycle and these disparities increase with age. Our main proxy for socioeconomic status is years of schooling obtained by the respondent's mother. (We also estimated models where socioeconomic status proxied by the highest amount of schooling attained by the mother or father, family structure at age 14, the Duncan Socioeconomic Index score of the mother or father, and the mother's score on the Armed Forces Qualifications Test.)

The regression results suggest that an additional year of maternal education reduces BMI (obesity) by an average of 0.20 kg/m² (1.2 percentage points) and that this effect rises by 0.007 kg/m² (0.07 points) per year of age, with considerably larger socioeconomic-status disparities predicted for women than men.

Channels for the socioeconomic-status disparities.⁴

Our examination of the mechanisms by which the beneficial effects of childhood advantage are translated into future outcomes highlights the importance of educational attainment and race/ethnicity. When years of respondent's schooling was included in the regression, the average socioeconomic-status effect was lowered by 26 to 35%. Including race/ethnicity (separately) also lowers socioeconomic-status effect by 15 to 16%. In combination, these explain a large majority of the (relatively small) socioeconomic-status gap in the obesity of 20-year olds but less of the (larger) disparity observed at age 40. Conversely, little of the socioeconomic-status effect appears to come through differences in family income, marital status, number of children, or the somewhat limited set of health behaviours that we can control for (drinking, smoking, exercise, job-related physical demands).

Our evidence that socioeconomic-status disparities in body weight and obesity grow with age is consistent with the findings of research focusing on other health outcomes. As with that literature, pathways for these effects are only partially understood. The inclusion of education and race/ethnicity covariates explains (in a statistical sense) close to half of the disparity observed at age 40 and an even larger share of the gap for males. Yet between one-third and three-fifths of the differential predicted for 40-year olds remains unaccounted for after including our full set of controls and we do not know the mechanisms through which education and race/ethnicity operate. Such uncertainty is by no means unique to this study. For instance, David Cutler and Adriana Lleras-Muney, in their careful review of the evidence, state that “work on the mechanisms underlying the link between health and education has not been conclusive. Not all theories have been tested and ... studies often will conflict with each other.”⁵ Racial disparities in health outcomes such as infant mortality are similarly

large, persistent and difficult to explain.

Footnotes

- 1 Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999-2004. JAMA. 2006; 295(13): 1549-1555.
- 2 Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. JAMA. 2002; 288(14): 1723-1727.
- 3 Case A, Lubotsky D, Paxson C. Economic Status and Health in Childhood: The Origin of the Gradient. American Economic Review 2002; 92(5): 1308-1334.
- 4 Baum CL, Ruhm CJ. Age, [Socioeconomic Status and Obesity Growth](#). National Bureau of Economic Research Working Paper No. 13289, August 2007.
- 5 Cutler DM, Lleras-Muney. Education and Health: Evaluating Theories and Evidence. National Bureau of Economic Research Working Paper No. 12352, June 2006.