The relationship between obesity prevalence and socioeconomic status can be examined in different ways. This briefing compares several approaches to give a fuller picture of the current situation and of changes over time.

- Overall, for women, obesity prevalence increases with increasing levels of deprivation, regardless of the measure used. For men, only occupation-based and qualification-based measures show differences in obesity rates by levels of deprivation.

- Among women, most measures show that lower socioeconomic status is associated with a greater risk of obesity. The pattern is less straightforward for men, with only some measures showing a clear relationship between obesity and deprivation.

- Obesity in women rises steadily with falling household income, and there is a significant difference in prevalence between the highest and lowest income groups. The differences are smaller for men and the trend is less clear-cut. (Figures 1 and 2)

- There is also a significant relationship between obesity prevalence and occupation-based social class for women. The prevalence of obesity for women in unskilled occupations is twice that of those in professional occupations. The overall pattern is similar for men: those in professional occupations have lower obesity prevalence than any other group. (Figure 3)

- When all manual and non-manual groups are combined, obesity prevalence is significantly higher in the manual group for both men and women.

- The National Statistics Socio-economic Classification (NS-SEC) shows a similar picture. Obesity prevalence is higher among both men and women in lower classifications, with smaller differences between groups for men. (Figure 4)

- Obesity is also associated with educational attainment. Obesity prevalence is higher in both men and women who have fewer qualifications. (Figure 5)

- The Index of Multiple Deprivation (IMD) 2007 shows that women living in more deprived areas have higher levels of obesity than those in less deprived areas. There is no clear pattern for men. (Figure 7)

- Among men, the prevalence of obesity increased across all social classes between 1997 and 2008. (Figure 8). Among women, increases in obesity prevalence occurred in all classes except professional women where there was no overall change (Figure 9).
The term ‘socioeconomic status’ is generally used to identify a person’s status relative to others based on characteristics such as income, qualifications, type of occupation, and where they live. As a result, a number of measures have been developed to classify people into groups based on different characteristics. These measures are used to assess inequalities between social groups. This briefing summarises the evidence of the link between obesity prevalence in adults and socioeconomic status in the English population.

Obesity prevalence in England is known to be associated with many indicators of socioeconomic status, with higher levels of obesity found among more deprived groups¹. The association is stronger for women than for men², a pattern that has been observed in many other developed countries³.

### Obesity and household income

Household income is a good indicator of socioeconomic status. In the Health Survey for England (HSE), income is adjusted to take into account the number of people living in the household (‘equivalised household income’). Splitting the population into five equal-sized groups (quintiles) based on income level allows for comparison across the range of incomes. Using HSE data, Figure 1 shows the relationship between obesity prevalence and income for men and women.

For women, there is an almost linear relationship, with obesity rising steadily as household income falls. However, the trend levels off as income falls: there is no significant difference in prevalence between the two lowest income groups.

For men, the pattern is less clear. There is little difference between obesity prevalence in the highest and lowest income groups. The only significant finding is that the second lowest quintile has a significantly higher prevalence than all other income groups.

#### FIGURE 1: Prevalence of obesity in adults (aged 16 and over) by equivalised household income quintile. England, 2004–08

![Figure 1: Prevalence of obesity in adults (aged 16 and over) by equivalised household income quintile. England, 2004–08](image)

Source: Health Survey for England

Figure 2 also shows the relationship between income and obesity. It uses data from the 2008 Millennium Cohort Study (MCS), analysed in a similar way. Here the data is for adults whose children were born between September 2000 and August 2001.

The pattern is very similar to that for the HSE data in Figure 1. Obesity prevalence for women increases with increasing levels of deprivation while there is no clear pattern for men.

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¹ Where significant differences in obesity prevalence are reported these have been tested at a 95% significance level. A significant difference in prevalence may still occur where confidence intervals in the figures appear to overlap.
Obesity and social class

The HSE defines social class according to occupational groups based on skill levels, from ‘professional’ to ‘unskilled manual’. Figure 3 shows that obesity prevalence by social class shows a different pattern for men than for women.

In women, obesity prevalence rises from social class I to V. Although the pattern is not smooth across all the occupational groups, women in unskilled manual occupations have more than twice the prevalence of obesity (33%) of professional women (14%). Men in professional occupations have significantly lower obesity prevalence than those in most other occupational groups, but the differences are smaller than for women.

When the categories are combined into manual and non-manual occupational groups, obesity prevalence is significantly higher in the manual group for both men and women (this analysis is not illustrated here).

Source: Health Survey for England
Obesity and socioeconomic classification

The National Statistics Socio-economic Classification (NS-SEC) classifies individuals based on characteristics such as career prospects, autonomy at work, mode of payment and period of notice.

Figure 4 shows obesity prevalence for men and women across different NS-SEC groups. Women in the three highest occupational groups and men in the two highest groups have a significantly lower prevalence of obesity than those in other groups.

**FIGURE 4:** Prevalence of obesity in adults (aged 16 and over) by National Statistics Socio-economic Classification. England, 2004–08

![Figure 4: Prevalence of obesity in adults (aged 16 and over) by National Statistics Socio-economic Classification. England, 2004–08](image)

Source: Health Survey for England

Obesity and educational attainment

Figure 5 shows that obesity prevalence varies with levels of educational attainment. It groups men and women according to their highest qualification, showing a general trend of rising obesity prevalence with decreasing level of education. Both men and women with degree-level qualifications have significantly lower rates of obesity than all others, and those with no qualifications have the highest rates of obesity.

**FIGURE 5:** Prevalence of obesity in adults (aged 16 and over) by highest level of education. England, 2004–08

![Figure 5: Prevalence of obesity in adults (aged 16 and over) by highest level of education. England, 2004–08](image)

Source: Health Survey for England
Obesity and deprivation

The Index of Multiple Deprivation (IMD) 2007 is a composite measure of deprivation based on information from seven domains (income; employment; health and disability; education, skills and training; housing and services; crime; and living environment). In contrast to other measures used in this paper, the IMD is based on the characteristics of the geographical area of residence rather than characteristics of the individual.

In the HSE, respondents are divided into five equal-sized bands (quintiles) based on IMD score of their area of residence, ranging from the least to the most deprived fifth of the population. The map in Figure 6 shows how areas of deprivation are distributed across England. It is based on a geographical unit called a Lower Super Output Area (LSOA) with an average population of around 1,500. The most deprived areas (darker shades) are predominantly in the North West, North East, Yorkshire and The Humber, West Midlands, and London. However, every region has some areas in the most deprived quintile.

**FIGURE 6: Distribution of deprivation in England: IMD 2007 by LSOA**
Figure 7 shows the prevalence of obesity by deprivation quintile. Women living in more deprived areas are more likely to be obese: obesity prevalence rises from 22% in the least deprived quintile to 30% in the most deprived quintile. Once again, there is no clear pattern for men.

**FIGURE 7: Prevalence of obesity in adults (aged 16 and over) by deprivation quintile based on IMD 2007, England, 2007–08**

![Figure 7: Prevalence of obesity in adults (aged 16 and over) by deprivation quintile based on IMD 2007, England, 2007–08](image)

Source: Health Survey for England

**Trends**

Social class data has been consistently collected so that trends can be observed over several years. Figures 8 and 9 show trend data for men and women by social class from 1997 to 2008. They show five-year moving averages, which even out year-on-year variation.

Among men, obesity prevalence increased across all social classes over this period. Men in professional and semi-skilled manual groups show the smallest increase (around six percentage points), whereas the skilled manual group had the largest increase (around nine percentage points).

Among women, the overall change in prevalence within each social class has been less pronounced. Women in professional occupations show no overall change, despite an apparent five percentage point decrease between 1998 and 2003 due to low sampling of women in this group. Among other social classes, obesity prevalence rose by between four and seven percentage points.
**FIGURE 8:** Prevalence of obesity in men (aged 16 and over) by social class, 5-year moving averages, 1997–2008

![Graph of obesity prevalence in men by social class, 1997–2008.](image)

Source: Health Survey for England

**FIGURE 9:** Prevalence of obesity in women (aged 16 and over) by social class, 5-year moving averages, 1997–2008

![Graph of obesity prevalence in women by social class, 1997–2008.](image)

Source: Health Survey for England
What can different deprivation measures tell us?

It is clear that there are significant inequalities in obesity prevalence within the population. Among women, obesity prevalence increases with decreasing socioeconomic status. However, the pattern is less clear for men, and the different indicators used in this paper give a different picture.

Male manual workers have higher rates of obesity than non-manual groups, and obesity prevalence rises with decreasing educational level among both men and women. However, obesity varies much less between men in different income groups, or living in areas of different levels of deprivation, and a more detailed breakdown by occupational group also reveals little.

The implications of these findings are that for women, all indicators of socioeconomic status are likely to provide a good indication of obesity prevalence within the population. Up-to-date, individual-level information (e.g. income or educational achievement) offers the most accurate way of highlighting those at high risk of obesity, but if only demographic information such as postcode is available then area-level indicators (e.g. IMD 2007) provide a good indication of risk of obesity for women.

Among men, it may be that there is much less inequality in the prevalence of obesity. More care is certainly needed in choosing an indicator which will identify at risk groups. Data on manual and non-manual occupational groups, or men with different levels of educational attainment, is likely to offer the best way to track changes over time or to highlight men at high risk of obesity. Area-based deprivation indicators, such as the IMD, will not reliably predict which men are at highest risk of obesity.

Data sources

**Health Survey for England**

Most data presented in this briefing are from the HSE. The HSE is a cross-sectional survey which samples a representative proportion of the population. It is the only nationally representative survey of English adults that records body mass index (BMI).

*Timing of data collection:* The survey is conducted annually. Due to the sample size of the HSE, data for 2004 through to 2008 have been combined for most of the analyses in this report to provide more robust estimates by socioeconomic subgroup. The Index of Multiple Deprivation was revised in 2007, so analyses involving this variable use only 2007 and 2008 data.

Estimates presented in this report are based on weighted figures with the exception of trend analyses for social class which are based on raw counts.

*Date of next release:* The report on the HSE 2009 is scheduled to be published online in December 2010. The data will be available from the UK Data Archive two to three months after publication of the report.

**Millennium Cohort Study**

The MCS is a longitudinal survey that follows a sample of nearly 19,000 children born in England, Wales, Scotland and Northern Ireland between September 2000 and August 2001, and the households they live in. Repeat surveys were conducted in 2004/05, 2006 and 2008. Although it is not representative of the whole English population, it provides an additional source of information about obesity and is useful for comparison with HSE data. Only information for England has been used in this report.

*Date of next release:* The next data collection is due in 2012. The data will be available from the UK Data Archive from mid 2013.
Definitions

Body mass index and weight classification in adults

BMI is a measure of weight status. BMI is a person’s weight in kilograms divided by the square of their height in metres. The following cut-offs are used to classify adults:

<table>
<thead>
<tr>
<th>BMI range (kg/m²)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 18.5</td>
<td>Underweight</td>
</tr>
<tr>
<td>18.5–24.9</td>
<td>Healthy weight</td>
</tr>
<tr>
<td>25.0–29.9</td>
<td>Overweight</td>
</tr>
<tr>
<td>30.0–39.9</td>
<td>Obese</td>
</tr>
<tr>
<td>Greater than or equal to 40</td>
<td>Morbidly obese</td>
</tr>
</tbody>
</table>

In this briefing the definition ‘obese’ includes morbidly obese.

Confidence intervals (I)

Confidence intervals (CIs) are a way of expressing how certain we are about an estimate, such as an estimated prevalence based on the results for a small sample of the population. CIs define a range of values which we are 95% certain contains the true value. They are often shown on charts as a shape like I. When the CIs for two values do not overlap we can generally say that the difference between the two values is statistically significant.

References


Useful resources

Health Survey for England
http://www.dh.gov.uk/en/Publicationsandstatistics/PublishedSurvey/HealthSurveyForEngland/Healthsurveyresults/index.htm