

# Economic costs of obesity and the case for government intervention

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## Background

Obesity imposes a significant human burden of morbidity, mortality, social exclusion and discrimination. There is also a significant healthcare cost associated with treating obesity and its direct consequences. And social care costs are higher for the obese. Higher levels of sickness and absence from work among the obese reduce productivity and impose costs on businesses. Premature mortality as a consequence of obesity reduces the national output relative to the level it would be in the absence of obesity (1).

Obesity also imposes other costs. Many people are not in employment as a direct result of obesity, either on health grounds or for other reasons, including, possibly, discrimination in the workforce. This, too, reduces national output, reduces tax revenue and increases government expenditure on incapacity benefit and unemployment benefit (2). In addition, obesity increases operating costs for some businesses, for example, the costs of larger seats and fuel for aircraft.

## Costs of obesity: health

The exact cost of obesity and the extent to which these costs are internal or external to the individual will be dependent on the definition of obesity adopted and on

which costs are included. The House of Commons Health Select Committee (HSC) recently estimated a subset of these costs, updating previous estimates made by the National Audit Office (1). The HSC estimates that the total cost of obesity [i.e. for those with a body mass index (BMI) greater than 30] and its consequences in England in 2002 was around £3340–3724 million (2). If the costs of being overweight (BMI 25–30) are also taken into account, the HSC speculatively suggests (assuming costs to be half that for the obese) that the total annual cost of obesity and overweight would be around £6.6–7.4 billion.

Of this total, around £991–1124 million relates to the direct healthcare costs of treating obesity and its consequences, comprising general practitioner consultations, in-patient and day case admissions, out-patient attendances and drug costs. This equates to 2.3–2.6% of total net National Health Service (NHS) expenditure in 2001/02. The vast majority of this total was attributable to treating the *consequences* of obesity (including cardiovascular disease, type 2 diabetes, stroke, angina, osteoporosis and various cancers) rather than treating obesity itself.

## Costs of obesity: employment

Lost earnings (lost potential national output) directly attributable to obesity were estimated to be £2350–2600

million. Of this, around £1050–1150 million was due to lost earnings as a result of premature mortality attributable to obesity. Around 34 000 deaths annually are attributable to obesity, one-third of which occur before retirement age. These account for an annual total of 45 000 lost working years.

The remaining £1300–1450 million was accounted for by lost earnings as a consequence of certified sickness. There were around 15.5–16 million days of certified incapacity directly attributable to obesity in 2002. These costs do not include costs associated with uncertified sickness absence.

Indeed, new work suggests that the total impact of obesity on employment may be much larger than previously estimated (3). Using a large sample of individual level data, this work has shown that the probability of being in employment is significantly lower (up to 25%) for those who are obese than those of normal weight. This relationship holds for both men and women, although the magnitude of the effect is larger for women.

This work holds constant a wide range of other factors that might be expected to affect the likelihood of being in employment, such as age, gender, level of education, social class, ethnicity, area of residence, family size, etc. It also recognizes and controls for the possibility of ‘reverse causation’ – that being or becoming unemployed may in some way ‘cause’ people to become obese, rather than obesity ‘causing’ unemployment.

Interestingly, the causal impact of obesity on the probability of being in employment remains significant (though of a smaller magnitude) after controlling for a range of measures of physical and psychological health status. Thus, while some of the impact of obesity on employment is through its impact on health status, there remains a significant effect. One possibility is that this is indicative of discrimination against the obese in the labour market. (Although a full discussion is beyond the scope of this review, there is a significant body of evidence to suggest that employers may discriminate against the obese, consciously or subconsciously and may regard obesity as a signal of lower productivity.)

It is premature to make precise estimates of the costs of lower employment as a result of obesity, but it may be the case that the welfare costs (incapacity and unemployment benefit) may be £1–6 billion and the costs of lost earnings may be perhaps as much as £10 billion or more. There is also a significant body of evidence to suggest that employers discriminate against the obese.

In conclusion, the HSC estimate of the costs of obesity is around £3.3–3.7 billion. However, it is quite likely that this is an underestimate. In particular, new estimates suggest that employment effects of obesity might be much greater than previously thought. In addition, these estimates are not comprehensive. Social care costs associated

with obesity have not been estimated. Perhaps more significantly, there is also emerging evidence that obesity may reduce wage levels of those in employment and may also affect educational attainment (4,5).

Maybe one of the clearest messages is that the health-care costs of obesity, although significant in their own right (and growing rapidly) are, in all likelihood, only a minority of the total financial cost. There is a clear implication that obesity is much more than simply a problem for the NHS, and that reducing the burden will require wider action.

### Rationale for government intervention

Above, we summarized available estimates of the financial costs of obesity. But what does this actually mean and what are the implications for government policy? Clearly, the existence of high costs *per se* does not mean that government intervention to tackle obesity is either justified or desirable.

There are several grounds on which government intervention might be justified. First, to promote equity if, for example, there was bias against the obese in the provision of health care or in the labour market. Second, intervention may be required to uphold the law. Third, government intervention may correct or ameliorate market failure.

There are four main categories of market failure that might justify government intervention:

- externalities;
- imperfect information;
- vulnerable individuals and demerit goods (in economics, a demerit good is something that is seen as intrinsically unhealthy, degrading or socially demaging towards other people or to society at large once consumed. Examples of demerit goods include tobacco, alcohol and gambling);
- time-inconsistent preferences (a situation in which an individual’s preferences change over time without any change in information; for instance, intending to drink only three pints at the pub but drinking more when you get there).

We discuss each of these briefly in turn below. We note, however, that, for various reasons, Government may not be able to design an intervention that reduces the welfare loss – for example, if Government is insufficiently informed as to society’s preferences towards obesity or as to which (if any) interventions are available for which there is good evidence of cost-effectiveness.

### Rationale: externalities

Individuals may well rationally choose to exercise less or eat more than is medically optimal in the sense of maximizing life expectancy (in the same way that they may

rationally ride a motorcycle, make parachute jumps or climb Everest). If the individual bears the full costs of these decisions (and is fully informed of the risks), many would find it difficult to support government intervention. However, if the individual does not bear the full cost, 'consumption' will be higher than optimal and society bears the cost of this 'externality'.

The potential externality in the case of obesity comes in several parts. In a tax-based NHS, free at the point of use and funded independently of risk, obese individuals may not bear the full cost of their health care. A similar argument can be made for other publicly funded services which the obese are more likely to use, such as social care. In addition, as outlined above, obese individuals are less likely to be in employment. While foregone earnings are borne by the individual, the costs of unemployment benefit, incapacity benefit and foregone tax revenues are borne by society.

However, while *contemporaneous* costs of health care for the obese are likely to be higher, it is not clear that *lifetime* costs will be higher as the obese live, on average, up to 9 years less than the non-obese (3). [We are not aware of any studies which have attempted to systematically quantify the comparative lifetime healthcare (or wider public expenditure) costs of the obese vs. the non-obese.] Similarly, it is not clear that lifetime costs of social care will be higher for the obese. In addition, it is likely that there will be other offsetting elements of public expenditure associated with the lower life expectancy of the obese, for example, public pension expenditure.

Thus, while there is good evidence to suggest there are significant externalities associated with obesity, the case for intervention on these grounds is not unambiguously proven. A study which comprehensively compares total lifetime social costs for the obese and the non-obese would be of value.

### **Rationale: imperfect information**

If individuals do not fully understand or accurately perceive the risks and consequences of their choices regarding diet, exercise and weight, they may make decisions that do not maximize their welfare. Imperfect information may take several forms in this context – information on the caloric content of different forms of food and activity, information on the links between calories and weight, information on the relationship between weight and health risks and costs, etc. The problem of imperfect information may also extend beyond individuals as consumers. For example, many employers provide initiatives to reduce the obesity-related costs to themselves and their employees, which may also be suboptimal if based on incomplete or asymmetric information. In principle, governments may seek to correct the consequences of this distortion.

If there exist imperfections of this kind, there would be a justification for government intervention to try to reduce or eradicate imperfect information. This might take the form of direct provision of information (e.g. on the health risks of obesity) or regulation or voluntary agreements (e.g. requiring manufacturers of food to clearly show nutritional information and health warnings on packaging).

There are, unfortunately, currently relatively few data available with which to test the extent to which imperfect information is a problem in the context of obesity.

### **Rationale: protecting vulnerable individuals; demerit goods**

The third broad category of potential justifications for government interventions relate to action to protect individuals who are deemed to be unable to make rational decisions. For example, individuals may be deemed too young to make rational decisions, or substances may be addictive, or some individuals may have self-control problems which preclude rational decision-making. In this case, food, or weight more generally, might be regarded as a type of demerit good in which (at least some) individuals are unable to be an optimal judge of their own welfare.

There is evidence that patterns of food consumption and exercise are set early in life. For example, the probability of obesity in adulthood is over 50% if a child is obese at age 6 years, although obesity at age 1 or 2 years is not associated with a greater risk of obesity in adulthood. Children with at least one obese parent are around three times more likely to be obese than those with no obese parents (6).

There would therefore appear to be a particularly strong case for government intervention in preventing childhood obesity. Indeed, the Government already intervenes in various ways, including in the regulation of food advertising and in local action on vending machines in schools.

### **Rationale: time-inconsistent preferences**

It is more contentious as to whether the Government can justifiably intervene in adult's decisions regarding diet, exercise and weight on the grounds that individuals cannot make rational decisions. The charge of nannyism is an obvious one. However, it has been argued that some foods may be addictive or that some individuals have problems of self-control or a strong desire for instant gratification that might mean they make decisions which are rational at the time of consumption, but which they later regret or which are not consistent with their long-term preferences. For example, people might decide to eat a chocolate bar if they walk past a vending machine in their office and feel a strong urge for instant gratification, but would later regret it. Furthermore, if the vending machine was not there and

they had to walk to a shop to buy the chocolate bar, they would not do so. There may be some element of self-control in which imperatives for instant satisfaction distort true preferences for some individuals. This type of model might help to explain why obesity trends have affected different groups and individuals in the population quite differently.

It has been argued that at least some individuals may exhibit time-inconsistent preferences towards obesity in the way they make choices involving the trade-off between instant gratification and future harm (7). This might be a vicious cycle to the extent that becoming overweight or obese might also change preferences or may exacerbate the consequences of the time-inconsistency of preferences. For instance, an overweight person may not care as much about the impact of eating a chocolate bar or may find it harder to resist. Thus, some individuals may find it difficult or impossible to achieve their long-term optimal behaviour without some kind of 'external' help.

## Conclusion

It is clear that the financial costs of obesity are high and rising rapidly as the prevalence of obesity increases. We have argued that the costs are probably much higher than previously thought because of significant employment effects associated with obesity. Making precise or comprehensive estimates of the costs is difficult but they certainly amount to many billions of pounds per year. Healthcare costs are a minority of the total costs associated with obesity, which underlines the need for co-ordinated action that extends beyond the NHS in tackling obesity.

Clearly, high costs of obesity do not, in themselves, justify government intervention. Rather, market failure, inequity or legal concerns should be the criteria on which the case for government intervention should be judged. We identified four broad categories of possible market failure: externalities, imperfect information, protecting vulnerable individuals or demerit goods and time-inconsistent preferences.

There is a strong logical argument that there is an externality associated with obesity, although this has not been unequivocally proven. Further research on the exact size

and nature of this externality would be welcome. Similarly, it is likely that there are significant gaps in information that would justify government intervention, although again there is a need for more evidence and research on the precise nature of these information imperfections. There appears a strong *a priori* case for government intervention in order to protect children. The case for intervening to protect adults is less clear-cut and this too would benefit from a better understanding of the psychological processes underlying individual behaviour.

Only by better understanding the true nature and size of these market failures can Government be expected to design policy interventions that are optimal (or even desirable). For example, information-based interventions will be ineffective if the true problem is that individuals do not bear the full cost of their actions or if there are psychological barriers to some individuals using that information in making rational choices. Similarly, interventions that alter the price or opportunity cost of, say, certain foods or physical activity, will be second-best solutions if the main problem is that people do not fully understand the risks.

## Conflict of Interest Statement

No conflict of interest was declared.

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