

## Taxes, Inequality and Obesity

### A global problem

There has been a marked increase in the prevalence of obesity in recent years, with approximately 24% of men and 26% of women in the UK classed as obese in 2011, compared with 13% and 16%, respectively, in 1993 [1]. This increase in obesity is associated with a rapid increase in the prevalence of chronic illnesses such as type II diabetes, cardiovascular disease (including stroke), coronary heart disease, cancer (lung and gastric) and ultimately, a reduced life expectancy. At one time the preserve of the developed world, obesity is now a global concern,

with an estimated half a billion obese adults world-wide [2].

#### Why are we getting fatter?

Economic growth, while acknowledged to contribute to the alleviation of malnutrition, also results in diets that are composed of a greater proportion of fats, rather than proteins or carbohydrates, worsening rates of obesity and obesity-related diseases. Rising income levels have led to an increase in expenditure on food, although smaller proportionally than the income increase. In developing countries substantial

increases in income are needed for an improvement in the nutrition status of individuals. In higher income countries, where people already consume well beyond the recommended calorie levels, extrapolating current income growth predicts a significant cumulative increase in calorie consumption at a level sufficient to exacerbate existing problems associated with obesity. This has been illustrated in parts of Asia where marked increases in obesity rates have been observed alongside economic growth.

### Inequalities in socio-economic status, nutrition, and health

It is recognised that nutrition and diet-related chronic diseases such as obesity follow a socio-economic gradient; the poor and poorly educated have worse diets and a greater prevalence of obesity. In general, individuals on low incomes are less likely to consume wholemeal bread and vegetables, but more likely to consume fat

spreads and oils, non-diet soft drinks, pizza, processed meats and table sugar. Within the low income group, older children appear to have worse diets than younger children or adults as they consume less fruit and more energy dense foods [3].

Inequalities in socioeconomic status also inevitably translate into

inequalities in health. Although overall mortality rates have fallen in recent years, the difference in rates between those at the top and the bottom of the social scale has widened, and is apparent for many of the major causes of death including coronary heart disease, stroke, lung cancer, and respiratory disease [4].

### Fiscal interventions

Tackling health inequality is currently a key challenge for public health policy so the inequality of nutrition and health is of particular concern. As well as conferring an increased risk of health problems at the individual level, the financial burden to society is significant too:

in England in 2002 the estimated cost of treating and managing diet-related disease was around 2.3 – 2.6% of the NHS total expenditure, equating to £6.6 – 7.4 billion [5]. There is, therefore, an economic rationale for the use of fiscal interventions to address the

problem of obesity: by introducing a tax on less healthy food/drink the consumption of these types of products will be reduced and the revenue raised could be used to cover the costs of addressing diet-related diseases.

## A 'fat-tax'

One potential intervention to address the problem of obesity is a 'fat tax'. Such a tax was implemented in Denmark in 2011 on items containing greater than 2.3% saturated fat, but was abolished a little over a year later amidst much controversy. Critics argued that it had failed to change eating habits, had encouraged cross-border trading and put jobs at risk. Contrasting opinion was that a year was insufficient time to gauge its impact, and that the indiscriminate way in which the tax was applied (e.g. for meat where the tax was imposed per carcass rather than per cut i.e. lean sirloin steak subject to it as well as fatty burgers), was a limiting factor in its success.

Most studies on fat tax have analysed the impacts on average intakes across the population, but the intakes of the most concern are those which are some distance away from the recommendations. A study conducted at the University of

## A 'soft drink tax'

Another potential intervention is a 'soft drink tax' levied on sugar-sweetened drinks. Evidence shows that regular consumption of sugar-sweetened drinks is associated with ill health including adverse weight gain, type II diabetes, cardiovascular disease, and dental caries. A soft drink tax could be an effective measure to improve health for many reasons: for example, some argue that soft drinks are non-necessities and contain no beneficial nutrients so no harm will result from reducing consumption; they are weak appetite suppressants so people will be unlikely to seek out alternative sources of replacement calories. Additionally, while taxes on unhealthy foods present concerns about unintended substitution effects (e.g. a tax on foods high in sat fat may lead to a shift towards salty foods), the

Reading aimed to measure the impact of a fat tax on the risks of diet-related disease, accounting for the full range of diets rather than average intakes [6]. This study modelled the impacts of a revenue-neutral policy in which a

tax based on saturated fat content is combined with a subsidy on fruit and vegetables. In this study, changes in consumption of fruits and vegetables and saturated fats were used to compute the effects on the risks of a range of diet-related diseases. The results, illustrated in figure 1, right, show that the subsidy of 15% on fruits and vegetables brings the average consumption of these in-line with the 'five a day' region. The 'fat tax', however, is insufficient to achieve this goal for fat intakes. Although mean levels of consumption move favourably in comparison with the guidelines, a large proportion of the population

potential substitutes for sugar-sweetened drinks (diet drinks, water, milk, fruit juice) may be less harmful for health.

A number of studies involving researchers at Reading have modelled the effect of a soft drink tax on the prevalence of obesity in the UK. One study used household survey data to estimate the effect of a 20% soft drink tax on obesity in the UK, while additionally seeking to understand the health effect on different income groups [7]. The results indicated that such a tax would reduce the number of obese adults in the UK by 1.3% (equating to 180,000), and the number of overweight adults by 0.9% (285,000). Such a tax would predominantly affect people aged less than 30 years, the major consumers of sugar-sweetened

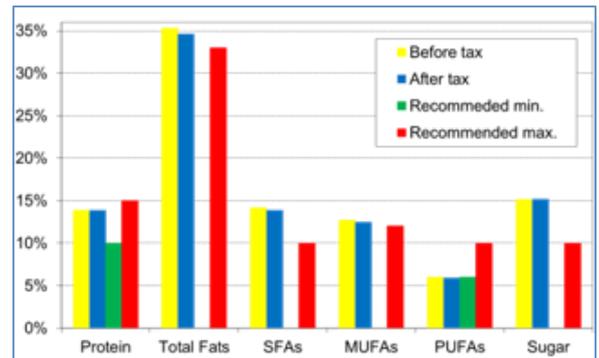


Figure 1 Impacts on average per capita nutrient intake (percent of energy intake) [6]

remains some distance away from the recommended levels of intake. As a result of this, once the changes in diet are converted into changes in the average risks of disease within the population, the impacts of the policy are negligible and, most importantly, a substantial part of the population continues to consume an unhealthy diet. The average level of diet-related disease risk does not, therefore, change substantially in the population.

drinks. Importantly, no significant differences were observed between different income groups. A further study expanded on this by attempting to differentiate consumers according to their level of soft drink consumption (low, medium or high) and how these sub-groups respond to a range of hypothetical tax scenarios in terms of substitution or replacement with other products [8]. The results indicate that households with higher levels of consumption have a greater response to taxation and that substitution (e.g. from non-diet to diet products) would have some impacts on the likely effectiveness of a tax. Moreover, overall impact on calorie consumption, which is the primary goal of a tax on beverages, is likely to be small.

## Limitations

The major limitation of fiscal interventions is that they are applied indiscriminately and do not take into account the economic, social, and health circumstances of the intended beneficiaries of the policies. Their indiscriminate application means that they are regressive in financial effect, affecting poorer members of society

the hardest. In the case of a soft-drinks tax, as the proportion of low-income households is particularly high in the high-consumers group, these families are spending a greater proportion of their food expenditure on soft drinks, and are therefore disproportionately affected by this tax. A fat tax coupled with a fruit and veg subsidy also

disproportionally affects low-income households because consumption of fruit and vegetables tends to be concentrated in higher income households [9]. In conclusion, any fiscal interventions should be considered amongst a suite of policy interventions, which should also include policies aimed at improving the poorest of diets.

## A targeted approach for the future

In addressing the issue of obesity efforts should be re-focused on those in society who are consuming the worst diet. Poor diets are a component of both social deprivation and overall health inequality: the latter should be the primary focus of public health

policy. Identifying individuals with the worse diets will allow interventions to be targeted to the section of the population in the greatest need, rather than making a marginal change in the diets of all. Furthermore, the targeting should acknowledge that different groups

make poor dietary choices for differing underlying reasons. Consequently different interventions may prove to be more successful than others within a given group.

## Next steps:

An ESRC-funded study, currently in progress at the University of Reading, aims to understand the underlying economic and cognitive reasons that drive individuals to make particular food choices. It is intended that the outcomes of this study can be used to help develop policies to improve diets by adopting a more targeted approach.

[1] "Public Health Survey for England," Department of Health, 2011.

[2] "WHO," 2008.

[3] Food Standards Agency, "Low Income Diet and Nutrition Survey: Summary of Key Findings," London, 2007.

[4] D. Acheson, "Independent Inquiry into Inequalities in Health Report," 1998.

[5] B. McCormick, "Economic costs of obesity and the case for government interventions," *Obesity reviews*, vol. 42, pp. 161-164, 2007.

[6] R. Tiffin and M. Arnoult, "The public health impacts of a fat tax," *European Journal of Clinical Nutrition*, vol. 65, pp. 427 - 433, 2011.

[7] A. D. M. Briggs, O. T. Mytton, A. Kehlbacher, R. Tiffin, M. Rayner and P. Scarborough, "Overall and income specific effect on prevalence of overweight and obesity of 20% sugar sweetened drink tax in UK: econometric and comparative risk assessment modelling study," *British Medical Journal*, 2013.

[8] R. Tiffin, A. Kehlbacher and M. Salois, "The effects of a soft drink tax in the UK," *Health Economics*, 2014.

[9] R. Tiffin and M. Salois, "Inequalities in diet and nutrition," *Proceedings of the Nutrition Society*, vol. 71, pp. 105-111, 2012.