Health Select Committee Inquiry: The impact of physical activity and diet on health

Written evidence submitted by nutritional epidemiology and dietary public health research groups at the MRC Epidemiology Unit and the Centre for Diet and Activity Research (CEDAR)

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Executive Summary

- Changing dietary behaviours requires policy and interventions that act at the individual, social, community and environmental levels.
- Policies aimed at prevention and whole populations are likely to be more cost-effective and equitable than those aimed only at high risk groups.
- Poor diet is a key risk factor in the development of type 2 diabetes, obesity, cardiovascular disease, and some cancers – all of which are major burden for the NHS and society
- The recent focus on the quality of school food needs to continue and be matched by increased focus on pre-school nutrition, including interventions to reduce weight gain resulting from excessive bottle-feeding.
- Socioeconomic inequalities and financial hardship have a negative effect on diet, with rising food prices meaning healthy food is increasingly expensive compared to less healthy food. Food prices are shaped 'from farm to fork', with agricultural policies often favouring the production of less healthy food.
- The neighbourhood food environment has a potentially powerful effect on diet choices. The density of takeaway outlets is associated with obesity, with the effect being greater for those of lower socioeconomic status.
- Food marketing is a potent force for shaping food choice, and more effective regulation is required in this area, particularly with the proliferation of online media sources.

1. Introduction

1.1 The **MRC Epidemiology Unit** is a department at the University of Cambridge. It studies the genetic, developmental and environmental factors (including diet and physical activity) that cause obesity, type 2 diabetes and related metabolic disorders. The outcomes from these studies are then used to develop strategies for the prevention of these diseases in the general population. www.mrc-epid.cam.ac.uk

1.2 The **Centre for Diet and Activity Research (CEDAR)** is studying the factors that influence diet and physical activity behaviours, developing and shaping interventions, and helping shape public health policy and practice. It is one of five Centres of Excellence in Public Health Research funded through the UK Clinical Research Collaboration (UKCRC). It is hosted by the MRC Epidemiology Unit, and is a partnership between the University of Cambridge, the University of East Anglia and MRC Units in Cambridge. www.cedar.iph.cam.ac.uk

1.3 Health behaviours are complex and there are no silver bullets for changing unhealthy patterns of behaviour to healthier ones. Diet is influenced by a combination of factors related to the individual, their social relationships, community, wider society and the environment (the 'socio-ecological model'). Therefore, strategies that target only a single aspect are unlikely to be successful: multiple barriers often need to be removed to achieve substantive change, and interventions need to be sustained rather than short term 'projects'. Furthermore, it is increasingly recognised that much behaviour is automatic, triggered outside of conscious awareness and cued by influences in the social, physical, economic and regulatory environments.[1] This explains why, for instance, simply using information to persuade people to change their health related behaviour has had – at best – modest effects.

2. Are we losing the fight and simply encouraging a 'normalisation' of obesity and is this distracting from prevention and early intervention?

2.1 We refer the committee to **section 2** of ***Written evidence submitted by physical activity research groups at the MRC Epidemiology Unit and the Centre for Diet and Activity Research (CEDAR).*** The points raised here with regard to physical activity also hold true for diet.

3. Availability and quality of data

3.1 Recent trends for obesity and conditions such as type 2 diabetes are reasonably well documented. However, trends in the underlying behaviours are much more poorly documented. Repeated cross-sectional surveys such as the National Diet and Nutrition Survey (NDNS) and Health Survey for England provide information about behaviours. However, because this data is self-reported, its quality and reliability can be poor. Given the imprecision of current measures, it would be advisable to complement national surveys with repeated assessment of population-level energy intake and expenditure.

3.2 The use of nutritional biomarkers is a promising way of better analysing actual diets and their effect on health. For instance, biomarker data from the EPIC-Interact study provided new insight into the health effects of different types of saturated fat. Whilst 'even chain' saturated fatty acids (commonly found in meats, oils) were associated with increased diabetes risk, 'odd chain' saturated fatty acids (commonly found in dairy) were associated with reduced diabetes risk. Because fatty acid metabolism is complex, the challenge is now to work out how the levels of these fatty acids in our blood correspond to the different foods we eat, but this is a promising area of research to improve diet data quality.[2]

4. Evidence of the impact of diet on health, and costs to the NHS and wider economy

4.1 The cost of diet-related ill health to the NHS has been estimated by the BHF Health Promotion Research Group at Oxford University to be £5.8 billion annually.[3] Poor diet is a key risk factor in the development of type 2 diabetes, obesity, cardiovascular disease, and some cancers. Considering diabetes alone, the cost to the NHS is growing rapidly. According to NHS England, in 2010/11

diabetes cost the UK £9.8 billion in direct costs – approximately 10% of the total health resource.[4]

4.2 Eating a diet characterised by high intake of fruits or vegetables and low intake of processed meat and sugar appears to lower diabetes risk. EPIC-InterAct is the world's largest study of type 2 diabetes examining data on over 12,000 cases of diabetes arising in a population with 4 million person years of follow up across 8 European countries. It found that for every 50g per day increase in consumption of red meat and processed meat, there was an 8% and 12% increased incidence of future type 2 diabetes respectively. Intake of total dairy products was not related to future diabetes risk, but fermented dairy products such as yoghurt and cheese were associated with a reduced risk. No association was found between risk of developing diabetes and overall fish intake, although fatty fish intake was associated with a modest reduction in diabetes risk. Those who had the highest fruit and vegetable intake had a 7% lower risk of diabetes when compared with those with lowest intake, with a particular benefit for consumption of green leafy vegetables. People who ate a dietary pattern in concordance with the principles of the Mediterranean diet had a reduced risk of developing diabetes.[5]

4.3 There has been much focus recently on the health effects of sugar. Many sugar sweetened beverages (SSBs) in particular have limited or no nutritional benefit, and have demonstrable health risks. EPIC-Interact data showed that there was a 22% increased diabetes incidence associated with the habitual consumption of one daily serving of SSB.[6]

5. Improving diet in children and infancy

5.1 Whilst there has been a welcome recent focus on the quality of school food,[7,8,9] it is important that the School Food Plan and free school meals for infants are robustly evaluated. Furthermore, more than one in five children are already overweight or obese by the time they start school, and nutrition and growth during infancy can also have long term effects on eating behaviours and risks of obesity in later life.

5.2 Although around 80 per cent of mothers start to breastfeed their baby, within six weeks some 78 per cent are supplementing breastfeeds with some bottle feed. Bottle fed babies often gain weight rapidly and tend to be at higher risk of childhood obesity. Breastfeeding remains optimal for mother and baby, but the needs of bottle feeding mothers need to be better answered to avoid risks to their babies' health. Systematic reviews[10,11] showed that bottle-feeding mothers require better information and support from healthcare professionals. A randomised controlled trial is ongoing to test a feeding programme which aims to support bottle-feeding families to achieve healthy growth and weight for their babies.[12,13]

5.3 Recent national guidelines from the Children's Food Trust have called for improved nutrition within early years settings, although they remain voluntary. In a survey of 851 nurseries in the UK, 92% were found to be serving fruit daily, but 30% of settings are still not serving vegetables at least once per day. Encouragingly, less than 1% served fizzy drinks , and nurseries in more deprived

areas served more whole grains and legumes, pulses and lentils; were more likely to dilute juice with water; allowed children to select their own portions; and sat with children during meals.[14] However, a large percentage of nurseries are still not meeting guidelines: further attention is needed to improve standards, as well as consideration of the diet provided in informal childcare settings and arrangements.

6. The impact of broader factors on diet

6.1 Financial and socioeconomic influences on diet

6.2 The effect of socioeconomic status (SES) on health outcomes is well established, with those with higher SES generally having better health outcomes. A recent analysis of National Diet and Nutrition Survey (NDNS) data found that not only do the population as a whole fail to meet recommended dietary guidelines, but those of a lower SES fared the worst. For instance, the least educated adults ate 128grams a day less fruit and vegetables than the most educated; the lowest occupational class consumed 26grams a day more red and processed meat than those in higher managerial occupations; and the highest income group were four times more likely than the lowest to have consumed any oily fish. The amount of food energy from non-milk extrinsic sugars differed by around two percentage points between the highest and lowest SES groups.[15]

6.3 An interactive data visualisation of people's food choices by income and education can be found at www.cedar.iph.cam.ac.uk/food-income-and-education-who-eats-more-of-what

6.4 Beyond traditional measures of socioeconomic status, perception of financial hardships (not having enough money to meet your needs or difficulty paying bills) is also associated with less healthy diets and obesity. In the Whitehall II Study of 3701 British civil servants, women who reported persistent financial hardship, versus those who did not, gained significantly more weight over 11 years.[16] In the EPIC-Norfolk study of 18,000 people aged over 50, those reporting greater financial hardships were more likely to be obese and have a larger waistline than those who did not report hardships. Women who reported greatest difficulty paying bills were more than twice as likely to be obese as those who had no difficulty. For men with greatest difficulty paying bills, this effect was even stronger – approaching two and a half times as likely.[17]

6.5 As well as larger structural efforts required to address health and financial inequalities, older people in particular may need support in their more immediate and pressing financial hardship, for instance support accessing fuel assistance programmes to avoid the 'heat or eat' dilemma. (Many older people fail to claim benefits due to them.) Coping and money management programmes may also be important. (e.g. AgeUK's Money Matters: www.ageuk.org.uk/money-matters.)[18] A recent review of dietary interventions in people of retirement age showed that they can also have lasting positive impacts.[19,20]

6.6 The effects of hardship and inequality may be compounded by rising food prices. Although the relative amount the average household spends on food has declined in the last half-century, in recent years food prices have risen faster than the price

of other goods. Analysis of the NDNS and the ONS Consumer Price Index shows that from 2002 – 2012 the absolute increase was greater for more healthy foods, making them progressively more expensive than less healthy foods. In 2012, more healthy foods were three times more expensive per calorie than less healthy foods.[21] This trend could result in people increasingly turning to less healthy foods, contributing to growing food insecurity and increasing health inequalities.

6.7 These price differences reflects causal factors from 'farm to fork' including agricultural policy and production, food distribution, and retail pricing strategies. For instance, the EU's Common Agricultural Policy (CAP) has subsidised production of certain goods such as beef and dairy, with little attention to fruit and vegetables.[22] Recent changes in the CAP will restructure the food system to significantly reduce the commodity price of sugar.[23] As a result, sugar – and caloric sweeteners more broadly – will become cheaper to incorporate into processed foods, potentially increasing sugar contents in existing products and the diversity of products containing sugar. This may have a negative impact on much needed initiatives to reduce sugar consumption across Europe.[24]

6.8 **Neighbourhood influences on diet**

6.9 As well as necessary national and international efforts to help shape healthier diets, there exists an important role for local authorities to influence the neighbourhood food environment. This is particularly pertinent when considering the proliferation of takeaway food outlets, as foods eaten outside the home are generally less healthy than those prepared at home. Over the past decade, consumption of food outside the home has increased by almost a third.[25] NDNS data showed that a fifth of adults ate take-away meals at home once per week or more. Less affluent children ate take-away meals at home more often. There was no relationship between socio-economic position and consumption of take-away meals at home in adults.[26]

6.10 Data from the MRC Fenland study was used to examine the density of takeaway food outlets located near homes, places of work, and along commuting routes. Participants were exposed to an average of 32 takeaway food outlets (and as many as 165), with exposure greatest near workplaces. Those with the highest exposure consumed an additional 40g of calorific food per week (equivalent to half a small portion of takeaway French fries), relative to the least exposed. Those with the highest takeaway exposure were also almost twice as likely to be obese as those least exposed.[27] Data also showed that highest takeaway food outlet exposure was only significantly associated with likelihood of obesity among those least educated. This suggests that neighbourhood takeaway food environment modification may be particularly effective for groups of low socioeconomic status, which may help to reduce health inequalities.[28]

6.11 National Child Measurement Programme and ONS data also indicate that children living in areas surrounded by fast food outlets are more likely to be overweight or obese.[29]

6.12 This evidence all adds to the case for regulating the proliferation of takeaway food outlets, and providing Local Authorities the means to do so. The health-impact of

takeaways is recognised by a number of policy bodies including the Greater London Authority[30], NICE[31] and Public Health England[32]. A number of Local Authorities, including Waltham Forest and Barking & Dagenham, are already regulating the proliferation of new takeaway food outlets. The NIHR School for Public Health Research has also commissioned research to investigate whether the healthiness of food outlets can be made healthier through appropriate interventions.[33,34]

6.13 Spatial distribution of supermarkets and other food stores does not disadvantage poor consumers overall in urban areas. However, some consumers (older, with limited mobility, without access to a car) remain disadvantaged. Nevertheless, spatial proximity to food stores seems relatively unimportant in influencing dietary intake compared with the in-store food retail environment and other social and demographic factors. Attempts to intervene in retail environments have so far met with failure.[35,36,37]

6.14 **Social environment and older people**

6.15 The social environment is very important in shaping diet choice. For example, EPIC-Norfolk study data from nearly 10,000 men and women aged 50 years and over found that in older adults, being single or widowed was associated with decreased daily variety of fruit and vegetables eaten compared to being married or living as married. This association was stronger in men. Living alone and having less frequent friend contact exacerbated this effect. Interventions that can support social relationships are therefore relevant for supporting a healthy diet, and events in later life such as retirement and widowhood are important to recognise in these interventions.[38,39]

6.16 **Marketing influences on diet**

6.17 Food marketing is common across a variety of contexts (TV, magazines, outdoor). It tends to be for less healthful products, and people living in less affluent circumstances are more exposed to it.[40,41,42] Unhealthy food is prevalent at supermarket checkouts. Whilst consumer pressure has led to some supermarkets substituting these products, non-food stores increasingly promote unhealthy food at their checkouts.[43]

6.18 A number of systematic reviews have concluded that food promotion has an influence on children's food preferences, purchasing requests and consumption.[44] Although most research focuses on children, who are perceived to be particularly vulnerable to food marketing, there is also evidence that food marketing affects adults' food consumption.[45] As most food marketing focuses on less healthful products, food marketing is likely to play an important role in the development and maintenance of overweight and obesity.[46]

6.19 In 2007, the UK became the first territory to introduce statutory scheduling restrictions of TV food advertisements to children, which is welcomed. Unfortunately, the regulations did not achieve their intent: TV exposure to adverts for foods high in salt fat and sugar increased by 50% post intervention. This is likely to be because they focused on just children's TV, when most children watch a much wider range of programmes than just those designed specifically for

children. Revised regulations that capture what and how children watch TV are warranted. More attention should also be paid to online food marketing in general and how this could be regulated.

7. What policy changes, including national or local regulation, taxation or financial incentives have been shown to be effective in other countries?

7.1 There is growing evidence that food taxes can have a role in reducing consumption of unhealthy food items. Notable recent food taxes include Denmark (saturated fat), France (sugary drinks), Mexico (sugary drinks) and Hungry (sugary drinks, salty condiments and some snacks). The introduction of the Danish tax was associated with reduced consumption of the taxed items (spreads, oils and some meats high in saturated fats), and the Mexico tax with a 10% fall in consumption of sugary drinks.[47,48] There has been no published evaluation of the French and Hungarian taxes. Modelling studies suggest the magnitude of the observed changes in purchases are likely to result in small but important improvements in population health.[49] Any tax needs to be carefully designed, considering also what other food items people might eat instead (e.g. taxing fats might lead to an increase in salt consumption). Resistance from industry can be strong (and led to the removal of the tax in Denmark), but it has been effectively countered in Mexico and Berkeley, California.

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