Public Health England

Protecting and improving the nation's health

Sugar Reduction
The evidence for action

October 2015

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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Executive summary

We are eating too much sugar and it is bad for our health. Consuming too many foods and drinks high in sugar can lead to weight gain and related health problems, as well as tooth decay. Almost 25% of adults, 10% of 4 to 5 year olds and 19% of 10 to 11 year olds in England are obese, with significant numbers also being overweight. Treating obesity and its consequences alone currently costs the NHS £5.1bn every year.

Sugar intakes of all population groups are above the recommendations, contributing between 12 to 15% of energy. Consumption of sugar and sugar sweetened drinks is particularly high in school age children. It also tends to be highest among the most disadvantaged who also experience a higher prevalence of tooth decay and obesity and its health consequences.

Over the last 30 to 40 years there have been profound changes in our relationship with food – how we shop and where we eat as well as the foods available and how they are produced. Food is now more readily available, more heavily marketed, promoted and advertised and, in real terms, is much cheaper than ever before. All of these nudge us towards over consumption. The changes have crept up on us and while none of this is anyone's fault, it is time to do something about it.

The Scientific Advisory Committee on Nutrition (SACN) has concluded that the recommended average population maximum intake of sugar should be halved: it should not exceed 5% of total dietary energy. SACN also recommended that consumption of sugar sweetened drinks should be minimised by both adults and children. By meeting these recommendations within 10 years we would not only improve an individual's quality of life but could save the NHS, based on a conservative assessment, around £500m every year.

SACN's recommendations have already been accepted by government. They are now being integrated into official UK advice on the best dietary approach for health and key nutrition policy instruments, such as the eatwell plate and advice on institutional catering.

The evidence for action

In June 2014, Public Health England (PHE) published 'Sugar reduction: Responding to the challenge'. This set out what PHE would do to review the evidence across a broad range of areas and identify those where action is most likely to be effective in reducing sugar intakes.

The findings from our review and our assessment of the evidence-based actions to reduce sugar consumption are set out in this report. The review first considers the need for action – how much sugar we eat, where it comes from, the health issues associated with this and the benefits in reducing our intakes. It then moves on, using our analysis of the evidence, to draw conclusions about what drives our consumption and advises on actions that could be implemented to change our sugar intakes. These include the environment around us that **influences** our food choices; our **food supply** and changes that could be made to this; **knowledge and training**; and **local action**.

The work undertaken in each of these areas has been carried out in a variety of ways. Some have been completed by PHE itself, while some have been carried out in partnership with others. The approaches for each work area are included in summary form in this document but are given in more detail in the individual reports included in the annexes. Many of these reports include literature reviews and extensive analytical components. All these were put through a rigorous process of peer review to ensure that the findings are robust.

The key findings from our evidence review for influencers, food supply and knowledge, training and local action are summarised below:

Influencers: **Children in England are exposed to a high volume of marketing** and advertising in many different forms both old (eg TV advertising, radio, cinema, press and billboards) and new (eg advergames, social media, online advertising), as well as through sponsorship by food and drinks companies of TV programmes, public amenities and events. **Available research evidence shows that all forms of marketing consistently influence food preference, choice and purchasing in children and adults.**

Food retail price promotions are more widespread in Britain than anywhere else in Europe. Foods on promotion account for around 40% of all expenditure on food and drinks consumed at home. Higher sugar products are promoted more than other foods. **Price promotions increase the amount of food and drink people buy by around one-fifth.** These are purchases people would not make without the in-store promotions. **They also increase the amount of sugar purchased from higher sugar foods and drinks by 6%** overall and influence purchasing by all socioeconomic and demographic groups.

Research studies and impact data from countries that have already taken action suggest that **price increases, such as by taxation, can influence purchasing of sugar sweetened drinks and other high sugar products** at least in the short-term with the effect being larger at higher levels of taxation.

Food supply: The evidence shows that **lowering the sugar content of the food and drinks offered** in shops, restaurants, takeaways and the many places we eat including at work and in institutions (schools, hospitals, prisons etc) **could be a successful way of changing how much sugar the population consumes** as has already been demonstrated through work in the UK to reduce salt intakes. **Our analysis shows that a similarly structured and universal programme of reformulation to reduce the levels of sugar in all contributing food and drinks available would significantly lower sugar intakes, particularly if accompanied by reductions in portion size.** It also suggests that there are real opportunities to improve diets if healthier food was procured and provided or sold across the whole of the public sector. These approaches to sugar reduction do not rely on individual behaviour change. They are unlikely to widen health inequalities and indeed may reduce them, given the current distribution of sugar intakes and related diseases across the population.

Knowledge, training and local action: Accredited training in diet and health is not routinely delivered to many of those who have opportunities to influence others' food choices. As part of work undertaken for this report **a competency framework for people working in the catering, fitness and leisure sectors** was developed. Widespread adoption of this, alongside wider accredited training, **is likely to increase relevant knowledge and improvements in diet such as reductions in the amount of sugar consumed**. Local action, when delivered well, can also contribute to changing people's knowledge and actions and lead to improved diets.

Areas for action

No single action will be effective in reducing sugar intakes. This is too serious a problem to be solved by approaches that rely only on individuals changing their behaviour in response to health education and marketing, or the better provision of information on our food. The environmental drivers of poor diets we face are just too big. Implementing a broad, structured programme of parallel measures to reduce the impact of influences that increase consumption, reduce the sugar content of food and drinks, and support people in making healthier choices through information and education, would be likely to achieve meaningful reductions in sugar intakes across the population. Our analysis of the evidence suggests that a successful programme could include the following levers:

1. Reduce and rebalance the number and type of **price promotions in all retail outlets including supermarkets and convenience stores and the out of home sector (including restaurants, cafes and takeaways)**
2. Significantly reduce opportunities to **market and advertise high sugar food and drink products to children and adults across all media including digital platforms and through sponsorship**

3. **The setting of a clear definition for high sugar foods** to aid with actions 1 and 2 above. Currently the only regulatory framework for doing this is via the **Ofcom nutrient profiling model, which would benefit from being reviewed and strengthened**
4. Introduction of a broad, structured and transparently monitored programme of **gradual sugar reduction in everyday food and drink** products, combined with **reductions in portion size**
5. Introduction of a **price increase of a minimum of 10-20%** on high sugar products through the use of a tax or levy such as on **full sugar soft drinks**, based on the emerging evidence of the impact of such measures in other countries
6. Adopt, implement and monitor the government buying standards for food and catering services (GBSF) **across the public sector, including national and local government and the NHS** to the ensure provision and sale of healthier food and drinks in hospitals, leisure centres etc
7. Ensure that accredited training in diet and health is routinely delivered to all of those who have opportunities to influence food choices in the **catering, fitness and leisure sectors** and others within local authorities
8. Continue to raise awareness of concerns around sugar levels in the diet to the public as well as health professionals, employers, the food industry etc., encourage action to reduce intakes and **provide practical steps to help people lower their own and their families sugar intake**

Success will depend on the engagement of a wide range of people and organisations. Actions can be started and continued by individuals, families and organisations as the wider debate and plans for implementation develop.

Any significant progress to reduce sugar intakes would yield benefits.

Introduction

In June 2014, alongside the publication of the Scientific Advisory Committee on Nutrition's draft report on 'Carbohydrates and health', PHE published 'Sugar reduction: Responding to the challenge'.[1] It set out the work that PHE would take forward to review the evidence and identify areas for possible action to reduce sugar intakes. This document brings together the findings and conclusions from the evidence that has been reviewed to inform the government's thinking on sugar in the diet as requested by the Department of Health.[2] We also report on health marketing through the government's Change4Life programme, which took place from June 2014 onwards, to help families reduce their sugar intakes and highlight a number of other actions undertaken by PHE to help reduce sugar intakes.

Definitions of sugar vary. In this report the term 'sugar' is used as shorthand for the 'free sugars' definition set by SACN. This includes all sugars added to foods plus those naturally present in fruit juices, syrups and honey. It does not include the sugars naturally present in intact fruit and vegetables or milk and dairy products.

Background

Sugar and health

Consuming too much sugar and too many foods and drinks high in sugar can lead to weight gain,[3] which in turn increases the risk of heart disease, type 2 diabetes, stroke and some cancers.[4] It is also linked to tooth decay.[5] In 2012, almost 25% of adults in England were obese and a further 37% were overweight.[6] In children, the situation is particularly worrying with almost 10% of 4 to 5 year olds and 19% of 10 to 11 year olds being obese. An additional 13% and 14% of 4 to 5 year olds and 10 to 11 year olds respectively are overweight (see figure 1).[7] In 2013, one-third of five year olds and almost half of eight year olds had decay in their milk teeth, with tooth decay also found in 34% and 46% of 12 and 15 year olds respectively.[8] Obesity and its consequences alone cost the NHS £5.1bn per year. [9]

Both excess weight and tooth decay are associated with deprivation in England.[10,11] For example, children living in the most deprived communities are twice as likely to be obese or overweight as those in the least deprived for both age groups considered (reception and year 6) (see figure 2).

Figure 1. Body mass index of children by age (National Child Measurement Programme)

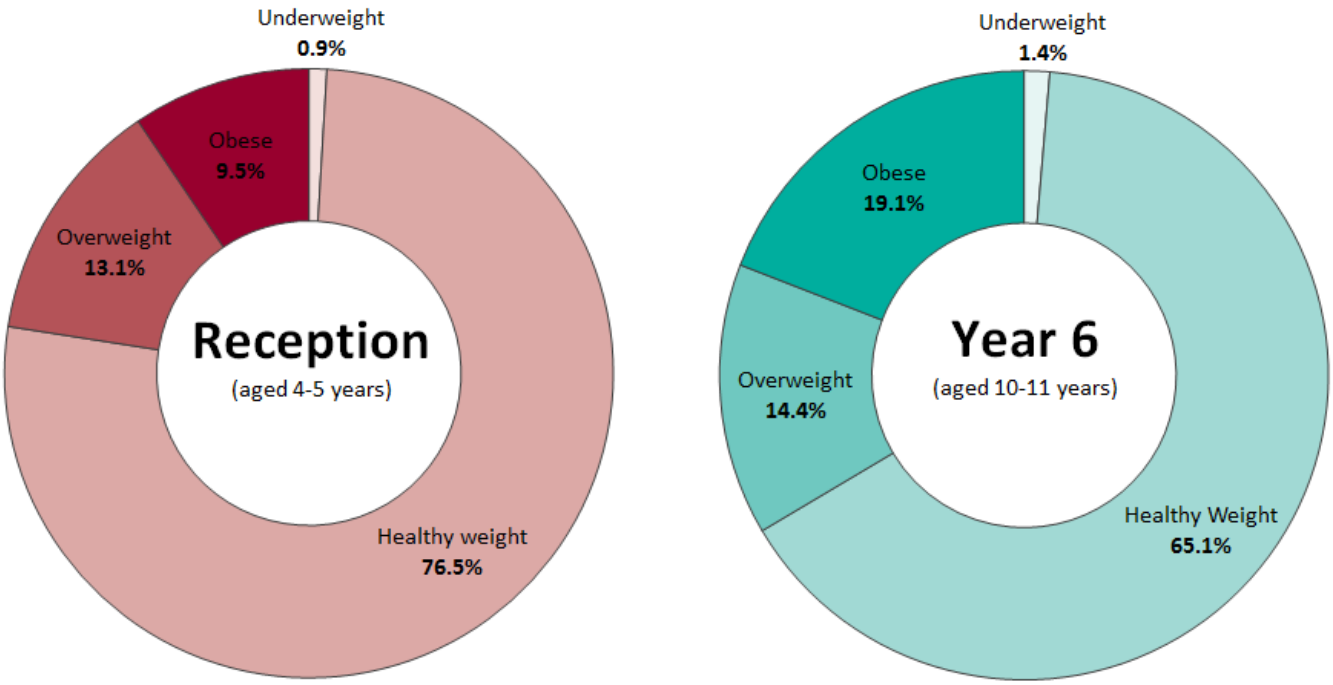
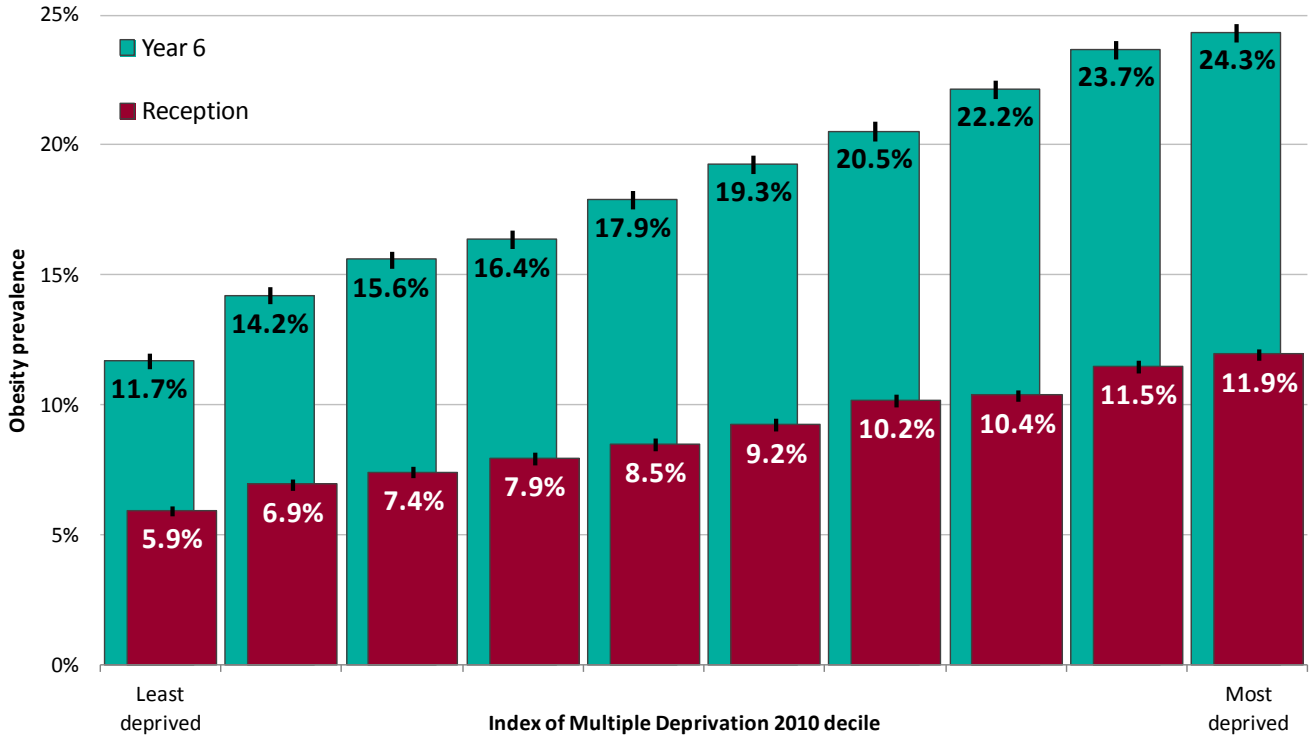


Figure 2. Obesity prevalence by deprivation decile (National Child Measurement Programme)



Scientific Advisory Committee on Nutrition 'Carbohydrates and health' report

The Scientific Advisory Committee on Nutrition (SACN) published its final report 'Carbohydrates and health' in July 2015.[12] This included recommendations that the average population intake of sugar should not exceed **5%** of total dietary energy for the population aged two years upwards (halving the previous recommendation) and that consumption of sugar sweetened drinks should be minimised by both adults and children. These recommendations are based on SACN's review of the evidence, which demonstrated that:

- in adults, when consuming an unrestricted daily diet, increasing the percentage of total energy from sugar leads to increases in energy intake
- greater consumption of sugar sweetened drinks is associated with increased risk of type 2 diabetes
- consumption of sugar sweetened drinks, compared to non-sugar sweetened drinks, results in greater weight gain and increases in body mass index in children and adolescents due to increased energy consumption
- higher consumption of sugar and sugar containing foods and drinks is associated with a greater risk of dental caries

The report also includes recommendations for increasing fibre intake and confirmation that carbohydrates should provide around 50% of energy intakes (which also includes the new maximum sugar recommendation).

Further detail can be found in Annexe 1a.

All the recommendations have been accepted by government and integrated into the official UK advice on what constitutes the best diet for health.[13] Over the next few months key nutrition policy instruments will be changed to reflect this including messages given through Change4Life, the 5 A Day advice, the eatwell plate and the NHS Choices website.

Intakes

Current estimates of UK sugar intakes from the National Diet and Nutrition Survey programme (NDNS)[14] show that mean intakes are three times higher than the new 5% maximum recommended level in school-aged children and teenagers (14.7% to 15.6% of energy intake) and around twice the maximum recommended level in adults (12.1% of energy intake) (figure 3).

Figure 3. UK sugar intake compared to the recommended maximum of 5% energy

In general, the main sources of sugar in the UK diet are similar for both children and adults (figures 4 and 5 respectively). These include soft drinks; table sugar; confectionery; fruit juice; biscuits, buns, cakes, pastries and puddings; breakfast cereals; and alcoholic drinks (for adults) with some foods making a larger contribution in different age groups.

Soft drinks (excluding fruit juice) are the largest single source of sugar for children aged 11 to 18 years and, on average, those who consume them drink around 336ml per day (roughly equivalent to one can of a sugary drink). Soft drinks provide 29% of daily sugar intake, on average, for this age group as a whole. Table sugar and confectionery (21%) and fruit juice (10%) are also large contributors to the sugar intake of 11 to 18 year olds. For younger children (aged 4 to 10 years) soft drinks; biscuits, buns, cakes, pastries and puddings; breakfast cereals; confectionery; and fruit juice are the major sources. In adults (aged 19 to 64 years) table sugar; biscuits, buns, cakes, pastries and puddings; and soft drinks are the main sources.

There is evidence that a high sugar intake is associated with deprivation. For example, the NDNS found higher sugar intakes in adults in the lowest income compared to all other income groups. Consumption of sugary soft drinks was also found to be higher among adults and teenagers in the lowest income group.

Figure 4. Contributors to sugar intake in the UK – children aged 4 to 18 years

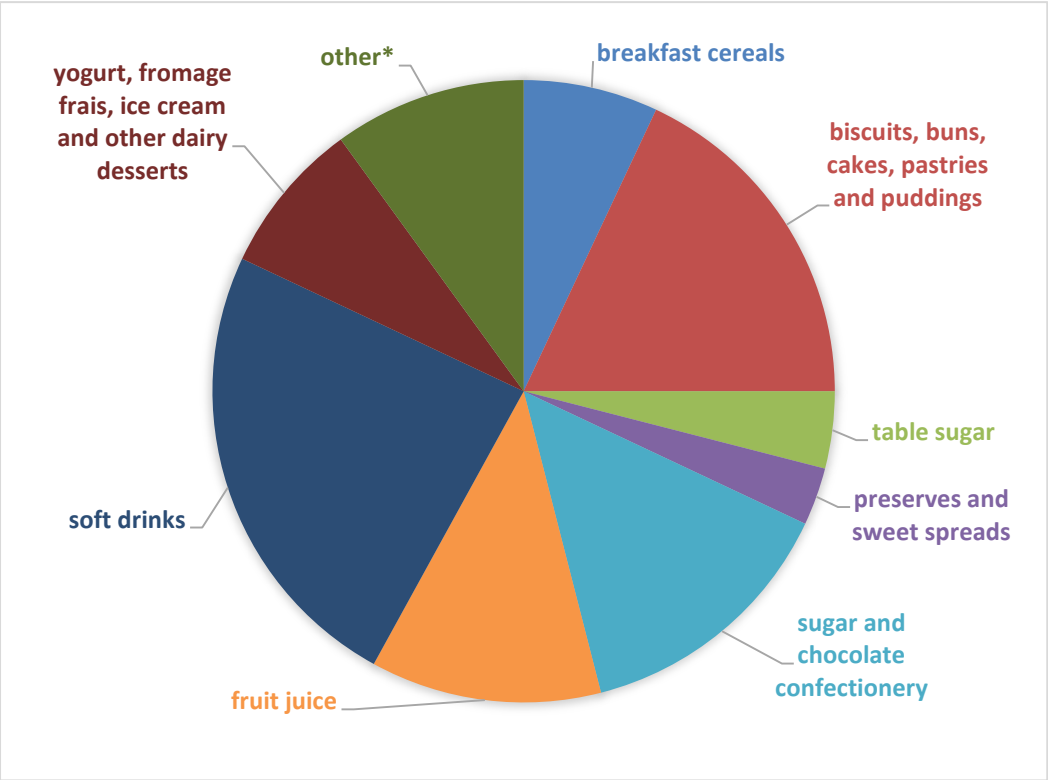
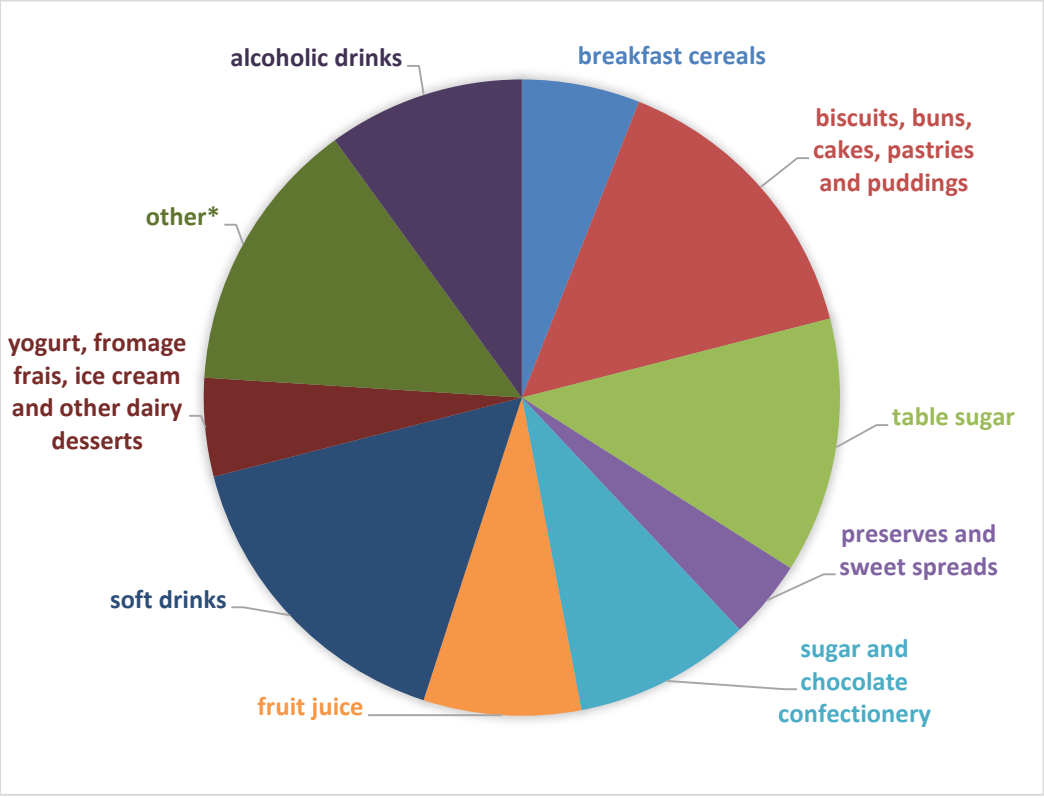


Figure 5. Contributors to sugar intake in the UK – adults aged 19 to 64 years



*other includes savoury sauces, baked beans, soups, powdered beverages and other minor sources

Potential cost savings of achieving SACN's sugar recommendation

Work has been completed to estimate the potential health impact (ie from reduced levels of excess weight, obesity and dental caries) and wider economic benefits, including discounted cost savings to the NHS, should SACN's recommendation on sugar be met (see Annexe 1b). This work was based on the PHE weight management economic assessment tool[15] with a number of adjustments being made to different parameters within the tool, and/or assumptions being made. The majority of the cost savings are realised from reductions in excess body weight and associated ill health. Savings associated with dental care costs are significant but much smaller. Tables 1 and 2 below summarise the health benefits and cost savings both per year (table 1) and over a 25 year period (table 2).

The PHE model follows cohorts of people over a defined time period and only assesses the impacts of reducing sugar consumption for people who are alive during that period (ie it cannot predict the impact on future generations) and does not take account of future children not becoming obese or developing tooth decay. This, and some of the cost assumptions made, means that the estimated cost savings are relatively conservative.

Table 1. Economic model outputs per year by each scenario

Scenario		Average outcomes per year		
	Years to achieve target	Deaths averted[a]	Caries cases avoided[b]	Total NHS cost saving (£m)[c]
Achieving 5% energy intake for sugar	5	4,700	242,000	576
	10	4,100	204,000	484
	15	3,500	173,000	396

aNumber of deaths that do not occur due to reductions in the health issues associated with higher intakes of sugar. The majority of these savings relate to the costs of conditions caused by obesity

b Number of infant ('baby') and adult (permanent) teeth that are not decayed, missing or filled due to reductions in sugar intakes

c Amount (£) saved by the NHS due to reductions in health conditions associated with higher intakes of sugar. Includes both caries healthcare cost saving and comorbidities of obesity healthcare cost saving

Table 2. Economic model showing cumulative outputs by each scenario over model time horizon of 25 years

Scenario		Outcomes over 25 year period		
	Years to achieve target	Deaths averted[a]	Caries cases avoided[b]	Total NHS cost saving (£bn)[c]
Achieving 5% energy intake for sugar	5	77,300	6,030,000	14.4
	10	68,300	5,101,000	12.1
	15	57,600	4,310,000	9.9

Summary

The evidence from the SACN 'Carbohydrates and health' report clearly and robustly presents the case for action to reduce sugar intakes to the new 5% recommendation and also to minimise consumption of sugar sweetened drinks.

This is the first time SACN has made a recommendation to minimise consumption of a specific food and its importance must not be underestimated. It is clear that current sugar intakes – ranging from 12% to 15% of dietary energy for adults and children respectively – are substantially above the new recommendation, and that most of the sugar in diets comes from a relatively limited range of foods.

The benefits of achieving SACN's recommendation are significant despite these being conservative estimates – not just in terms of reducing the burden of diseases associated with excess weight and tooth decay and their associated costs to the NHS but also by improving quality of life, reducing personal suffering and wider costs to society. Reducing sugar intake would also help reduce inequalities, as the lowest income groups suffer the highest burden of sugar-related diseases and have the highest intakes of sugar in their diets.

Responding to this challenge

It is clear that action needs to be taken to reduce sugar consumption. In 'Sugar reduction: Responding to the challenge' PHE made a commitment to undertake a comprehensive programme of work to review the evidence around existing initiatives and programmes that contribute to reducing sugar intakes, as well as work to develop new initiatives and areas for action. The outcomes, findings and progress of the various work streams that formed this programme of work are detailed in this document and associated annexes.

Factors affecting sugar consumption

Individual sugar intake is dependent on a number of factors, which can be grouped into three main categories:

- **influencers** such as marketing and advertising campaigns and product promotions lead us to vary our purchasing and consumption patterns
- **the food supply** covers the food and drink available to purchase in, for example, supermarkets and other food retail outlets, cafes and restaurants and the out of home sector generally; as well as that on offer in the workplace and school canteens where we now consume much of our food
- **knowledge, education, training and tools** can help us to choose, and enable others to help us choose, healthier diets through improved knowledge in relation to the risks associated with consuming too much sugar and how we can make healthier, lower sugar choices

The following four sections of this document provide an overview of the work that has been completed, including key findings and recommendations for future action. Work areas are grouped into these three categories: **influencers**; **the food supply** and **knowledge, education, training and tools**, in addition to highlighting the importance of **local action** to improve diet and reduce sugar intakes.

Final reports for each workstream included within the broad categories highlighted above can be found in the numbered annexes. To ensure that these findings are robust, the final reports for some of these – the fiscal, marketing and 'sweetness' literature reviews, the analysis of promotions on purchasing behaviour and the economic model – were put through a rigorous process of peer review.

Influencers

A wide range of factors influence the food and drink choices we make. Many of these are personal such as habit, health, likes and dislikes, religious or ethnic considerations, and others include the cost and time available to shop for, prepare and cook foods.[16,17] Price, promotion and marketing are potential influencers on food choice and therefore what we eat. These will be explored in this section of this report.

Taxes mainly on sugar sweetened drinks have been introduced in a number of countries either for revenue raising or as a way of influencing consumption levels. The latter approach is supported by a number of economic modelling studies (see Annexe 2).

Promotional and marketing techniques for specific products or brands have the aim of achieving one main goal – increases in sales. This is achieved through old (eg TV advertising, programme sponsorship, cinema, radio and billboards) and new methods (eg social media, advergames[d] and internet pop-ups), which are designed to influence our food choices by, for example, overriding our established eating habits, and taking advantage of others such as our desire to reduce costs. The intent can be to encourage us to switch between brands or products; or there may be an additional consequence of getting us to buy and consume more.

In 2014 the UK food industry spent £256 million promoting 'unhealthy' foods sold in retail alone (see figure 6). [18,e] While these multimillion pound investments are themselves testament to their expected impact in relation to product sales, the behavioural and health impact of these approaches, particularly on children, has been of concern for some time. While many reviews have considered this, one of the earliest was commissioned in 2003 by the Food Standards Agency[19], which concluded that:

- food advertising to children is ubiquitous
- the advertised diet is less healthy than the recommended one
- children enjoy and engage with food promotion
- food promotion is having an effect, particularly on children's preferences, purchase behaviour and consumption
- this effect is independent of other factors and operates at both a brand and category level

d The integration of advertisements into computer games.
e 'Unhealthy food' includes high sugar and/or fat foods sold in UK retail including: non-alcoholic drinks, chocolate, confectionery, snacks, desserts, ice cream, cakes, biscuits, sweet and savoury pastries, processed meat products, condiments.

Figure 6. Summary of marketing and promotional activity to encourage sales of high sugar foods and drinks

Other reviews have followed, as has some degree of regulation of marketing and advertising both within England and in other countries. In England, the primary means of regulation introduced in 2007 by Ofcom (the independent regulator and competition authority for the UK communications industries) is the restriction placed on the advertising of foods highest in fat, salt and sugar (HFSS) specifically during children's TV programmes. A food or drink can only be advertised if its nutrition profile meets a carefully constructed set of criteria involving both positive (fruit and vegetables, protein and fibre) and negative (salt, fat, sugar content) factors.[20] Lesser controls were set for other TV programming and for other advertising media such as the use of promotional offers and nutrition or health claims (further information is given on pages 13 and 14 of the marketing review co-produced by PHE and which forms part of this evidence package, see Annexe 3).

The Ofcom nutrient profiling model was set at a relatively early point in the consideration of the effects of advertising on food choice. The nutrients and cut off points included were developed in consultation with a wide range of stakeholders but are now seen by some as not stringent enough. This is for two reasons:

i. while the model has stopped the products with the highest levels of sugar, fat and salt being advertised it still allows products that are relatively high in one or more of these nutrients to be advertised
ii. while the food and drink advertised during children's TV has fallen, there is an increase in overall exposure to HFSS advertising either overall or during the times not covered by the Ofcom criteria and that therefore tightening of these should be considered.[21, 22, 23]

A recent review conducted for the Committee of Advertising Practice[24] (CAP) found that online advertising has increased significantly in recent years. This coincides with a sharp increase in online media use particularly among children and, it is argued, since regulations were introduced by Ofcom in 2007 restricting advertising during children's programming. Internet advertising expenditure (including online, mobile and tablet) reached £6.3bn in 2013 in the UK, a 15.6% increase compared to 2012. It is forecast to grow a further 14% in 2014 and 12.7% in 2015. This can be compared to total TV advertising spend of £4.6bn in 2013, £142m of which was spent on children's TV advertising.[25]

The CAP review also demonstrated that products considered to be less healthy are being advertised through online channels, including social networks and mobile apps, raising concerns that children might now be exposed to more advertising for less healthy products. It also identified that online marketing, because of its integrated nature, makes it more difficult for children to recognise and critically review its underlying intent.

Evidence reviews of marketing, promotions and fiscal measures

PHE and Teesside University co-produced two mixed methods reviews of the impact of (i) marketing and promotions and (ii) fiscal measures on purchasing and consumption of high sugar foods and non-alcoholic drinks and the impact on diet and health. These included reviews of the current published scientific and 'grey' literature[f] and a series of interviews with experts in relevant areas to try and identify additional evidence and/or information not currently available. PHE also commissioned Kantar Worldpanel to investigate price promotions offered in shops in Britain and any effects these may have on purchasing behaviour.

Marketing and promotions

The full methodology for the Teesside University/PHE marketing evidence review is included at Annexe 3. It gives details of the way in which the stakeholder interviews were carried out and includes information on the inclusion criteria, search strategy and screening and extraction methods that were used for the literature review. Searches resulted in a shortlist of 544 papers, which was reduced to 124 studies following scrutiny by the research team. When considered further, a total of 45 primary research studies were included in the review, which overall were of moderate quality and showed consistency in their findings. In terms of the stakeholder interviews, 20 people from non-governmental organisations (NGOs), academia, the private sector/industry as well as two international experts, were interviewed and one provided a written response.

Findings from the review, where much of the evidence focuses on children, showed that both old (eg TV, press, radio) and new (online advertising, advergames, social media) marketing methods are effective in influencing food preference, choice and consumption in children. While more limited, the evidence consistently shows that advertising also influences preference for, and the choice, purchase and consumption of, high sugar products (or less healthy foods to varying degrees) in adults, with some demonstrating that this impact may vary by population subgroup (eg gender, BMI).

The evidence demonstrates that although TV remains a dominant marketing technique effective at influencing food preferences, many different types of marketing – including advergames, advertising, use of characters and spokespeople, branding, product size, supermarket product placement and discounting – can all influence preference for high sugar product selection or consumption. For example:

f information or research output produced by organisations, outside of commercial or academic publishing and distribution channels

- advergames can play an important role in increasing preference for, or consumption of, high sugar foods
- the use of characters or ‘spokes characters’ can increase preference for, or choice or consumption of, high sugar foods in young children (aged 3 to 7 years)
- current, limited research also suggests an effect for marketing strategies such as sponsorship, integrated digital and online marketing influences on preferences, purchasing and/or consumption
- price discounting can have a significant impact on increasing sales of high sugar products
- end of aisle displays can significantly increase purchases of carbonated soft drinks

Outcomes from the triangulation of results from the primary research and stakeholder interviews show consistency. Although many areas have not been investigated either at all, such as placement in store (other than end of aisle), or in detail (such as sponsorship), it is notable that almost every study included in the review shows, whatever the technique, that marketing is effective at influencing food preferences and food choice.

Analysis of household purchasing data to assess the impact of price promotions on purchasing behaviour

Through the Kantar Worldpanel survey – a continuously reporting panel of 30,000 British shoppers – participants are asked to record the details of all food and drink purchases brought into the home, including amounts and prices paid. PHE commissioned Kantar Worldpanel to analyse the last two years of the data to investigate key questions in relation to price promotions in stores and whether, and if so how, these affect purchasing behaviour (Annexe 4).

Price promotions include a variety of different special offers available in retail which are specifically characterised as offering a discount on the usual selling price. These are typically restricted to a specific range, product or pack format and usually take one of three forms:

- a temporary price reduction – short term reductions to the normal price of food and drink products for a few weeks after which the price returns to normal
- multibuy – where shoppers are required to buy one or more items to benefit from the discounted price eg ‘buy 3 for £2’ as well as ‘buy one get one free’
- extra free – where the size of a food or drink product is temporarily increased, and this is highlighted on pack eg ‘30% extra free’

The analysis shows that price promotions in Britain are the highest in Europe and have reached record (but stable) levels, with around 40% of expenditure on food and drinks

consumed at home being spent on products on promotion. In other European countries such as Germany, France and Spain this is around half the level seen in Britain (around 20%). Promotions make products cheaper and lead to changes in normal shopping patterns (eg buying a different brand because it costs less). They also encourage consumers to buy and spend more on a particular type of product than normal. This increases the total amount of household food and drink purchased by around one-fifth (22%) and are purchases that people would not make if the price promotions did not exist. Promotions do not, as is often reported by food and drink companies, just encourage shoppers to switch from one brand to another. The effects of promotions can also be seen across all demographic and socioeconomic groups.

For example, a shopper might normally buy one pack of biscuits a week. When confronted with a ‘buy 2 for £2’ deal they buy two packs instead of one (double their normal quantity). While this extra pack of biscuits might be expected to last two weeks (if still consuming one pack per week), the shopper actually buys a third packet of biscuits during the second week. Therefore, not only have they consumed more within the space of that two weeks, the amount they have spent has also increased (having purchased three packets overall, which ultimately costs more than the usual pattern despite the promotional offer).

The analysis considers the effect of promotion specifically on sugar purchases including the sugars added and/or naturally present in food.[g] It shows that higher sugar food and drinks (particularly discretionary products such as carbonated drinks, biscuits, cakes etc) are more likely to be promoted and have greater relative price reductions than those applied to table sugar and products where sugar is naturally present (ie milk, fruit and vegetables), with the exception of fruit juice, which is promoted as much as other sugary drinks. This higher degree of promotion can more readily increase the amount purchased and therefore the total volume of food and drink brought into the home. In addition, the increased volume purchased is unlikely to be offset by reductions in purchases of similar products (ie buying more biscuits does not necessarily lead to a reduction in the amount of cakes purchased), leading to overall gains in the total amount of sugar brought in to the home.

It is estimated that 8.7% of the sugar brought into the home is a direct result of the extra food and drink bought on promotion. Around 6% of total sugar purchased comes from higher sugar foods and drinks specifically and could potentially be prevented if promotions on higher sugar products did not occur.

g For this review, food label information on sugar levels was used. Food labels give information on total sugar only and includes sugars both naturally present in, and added to, food and drinks.

Fiscal measures

The full methodology for the Teesside University/PHE fiscal evidence review is included at Annexe 2. The methodology section gives details of the way in which the stakeholder interviews were carried out and includes information on the inclusion criteria, search strategy and screening and extraction methods that were used for the literature review. This review primarily searched for evidence from experimental studies, where price increases have been tested, or evaluations of the effects of taxes introduced on unhealthy foods. Studies that have modelled the possible effect of taxes have been included only as background material. Searches resulted in a shortlist of 325 papers, which was reduced to 68 studies following scrutiny by the research team. When considered further, a total of 10 primary research studies and one grey literature primary study were included in the review which overall were of moderate quality and showed consistency in their findings. In terms of the stakeholder interviews, 15 people were interviewed and two provided written responses covering NGOs, academia, the private sector/industry and international experts.

Evidence from both stakeholders and current research studies suggest that increasing the price of high sugar foods and non-alcoholic drinks, whether through taxation or other means, is likely to reduce purchases of these products at least in the short term. There is reasonably consistent evidence from both experimental studies and data from countries that have introduced taxes that consumers can respond to changes in food and drink prices with the effect being larger at higher levels of taxation or price change. These findings align with the evidence from modelling studies which indicate that a tax would lead to a reduction in purchases proportionate to the level of tax applied, suggesting a tax of 10% to 20% would be necessary to have a significant impact on purchases, consumption and ultimately population health.

A table setting out details of the level of taxes applied in different countries, and the products that are subject to this tax, is included on pages 14 to 16 of Annexe 2. Data on the effectiveness of these measures, while not always robustly evaluated, suggests that reductions in sales have been seen as a result of the imposition of taxes in Norway, Finland, Hungary, France and Mexico. Following the introduction of a tax on sugar sweetened drinks of 10% in Mexico, an overall average 6% reduction in purchases of sugar sweetened drinks was seen in 2014, with higher reductions in purchasing of around 9% on average being seen in lower socioeconomic households.
Outcomes from the triangulation of results from the primary research and stakeholder interviews show consistency. There are some limitations to the data and research evidence currently available in relation to a number of areas.

Summary

The evidence shows that price, promotions and marketing are all effective strategies influencing preference for, and purchasing of, high sugar products in England. It is therefore very likely that they are also significantly contributing to our high intakes of sugar. It is particularly convincing in relation to price promotions because of the timescale (two years) and sample size (30,000 households) attached to the data which will even out any possible inconsistencies.

Higher sugar products are promoted heavily in British supermarkets at elevated levels compared to other foods. Price promotions increase the amount of foods people buy by around one-fifth and around 6% of total sugar purchased could potentially be prevented if promotions on higher sugar products did not occur. It is noticeable that the promotion of high sugar products, such as confectionery, is now moving into non-traditional food retailers, such as around the checkouts of leading clothing retailers, while others such as newsagents are actively upselling these products including using substantial price reductions and prompts to buy from checkout staff and at automatic till points. We are not aware of any research on the effect of this widening of retail platforms but behavioural science suggests that the effect may be large as being exposed to more food cues, ie simply seeing a food, can make us purchase and eat more.[26,27] In addition, price setting for different portion or pack sizes may be incentivising the purchase of larger volume products as the larger pack size appears to represent substantially better value for money eg soft drinks in quick-service restaurants.[28]

The evidence also shows that children are exposed to a high volume of marketing in many different forms, and that these affect food preference, choice and purchasing, moving choices towards less healthy products, including those higher in sugar. The restrictions that are currently in place only affect children's TV advertising specifically and not, for example family TV programming, while other forms of marketing – including the use of spokes characters and cartoons, brand advertising, sponsorship of television programming and advergames – which are currently either unrestricted or only partially restricted,[h,29] also provide an influence. It also suggests that the weight[30] and bias of UK industry promotion and marketing towards these products[31,32,33] is affecting sugar intakes and health.

It is likely that taking a broad range of actions on marketing and promotions would reduce purchase and therefore consumption of higher sugar foods and drinks, helping to lower sugar intakes and improve diets. This could include:

h There are only restrictions around licensed characters.

i. **limiting price promotions of high sugar foods and drinks in all retail outlets and by the out of home sector (cafes, restaurants, takeaway etc) eg 'buy 3 for £2' offers** as well as rebalancing in-store promotions towards healthier products, and limiting promotions of higher sugar (fat and salt) foods and drinks in all retail outlets including non-food shops and the out of home sector and the placement of these in-store

ii. **reducing exposure to marketing by setting broader and deeper controls on advertising of high sugar foods and drinks to children**. This could be achieved through a range of more specific activity including:

- extending current restrictions to apply across the full range of programmes that children are likely to watch as opposed to limiting this to just children's specific programming
- extending current restrictions on advertising to apply across all other forms of broadcast media, social media and advertising (including in cinemas, on posters, in print, online and advergames)
- limiting the techniques that can be used to engage with children, including plugging the 'loopholes' that currently exist around the use of unlicensed but commonly recognised cartoon characters and celebrity endorsement within children's advertising
- tightening the current nutrient profiling model that governs what can be advertised
- consider limiting brand advertising of well recognised less healthy products including through restrictions on sponsorship on eg sporting events

iii. **by taking other broader actions such as removing confectionery or other less healthy foods from end of aisles and till points, including in non-food retail settings (eg clothes shops), and discouraging pricing that incentivises the purchasing of larger pack or portion sizes**

The evidence suggests that **increasing the price of high sugar products by 10-20% or more through the use of a tax or levy would be likely to have an effect on purchasing behaviour and therefore sugar consumption at least in the short term.** It would seem logical that this would lead to a reduction in consumption and therefore sugar intakes although the current evidence has some limitations. The evidence also makes it difficult to separate changes in purchasing patterns resulting directly from price increases caused by the taxes from the 'halo' effect of the tax introduction, such as media articles, activity by campaigners and increased public awareness. However, these may be important components in enabling whole systems approaches to reducing sugar consumption and levels of obesity.

However, the impact of a tax or levy may be lower in changing purchasing behaviour than the impact of marketing or promotions. For example, a recently introduced 10% tax

on sugary drinks in Mexico has seen an average 6% decline in purchases in the first few months.[34] While this is significant, its impact is small when compared to marketing strategies such as end of aisle display locations, which have been seen to increase sales of carbonated drinks by as much as 50%.[35] It is notable that the degree of price discounting already present in UK stores on high sugar products and its consistent impact on purchasing of food brought into the home (increasing it by 22%) is likely to be greater than even the largest tax already introduced internationally. In addition, promotions and marketing tend to be applied to a wider range of products than existing international taxes, which are more focused on higher sugar foods like sugar sweetened drinks and confectionery, and perhaps because promotions are continually refreshed they seem to have a sustained effect in the UK market.

Food supply

Most of us know in broad terms what we should eat to have a healthy, balanced diet;[36] however, the average diet in the UK is poor and is not in line with current advice.[37] This is at least partly because most of our food choices are habitual and automatic and we exert little self-control over what and how much we eat.[38] Although 'healthy ranges' of food are offered by many retailers these will only ever have partial uptake. In addition, even the much improved nutrition information on food labels[39,40] has limited influence as few of us read these unless we are trying to lose weight or have a particular health issue.[41]

What we eat now is very different to what we ate 30 or 40 years ago.[42] As a result of advances in technology, economic development and other factors the food and drinks market has evolved to provide more choice than ever before. We are constantly nudged towards buying and eating more food – our environment is filled with more food outlets (shops, restaurants, takeaways and fast food restaurants, cafes and coffee shops)[43,44] and, in real terms, food is cheaper than ever before. We now spend significantly less every week on our groceries – between 1957 and 2006 the proportion of our average weekly expenditure spent on food and non-alcoholic drinks has halved from 33% to 15% which is good for household budgets[45] but not necessarily so good for our food choices. While none of this is anyone's fault, it's time to change this and influencing our overall supply of food and drink is critical so that improvements are made to what is available to us and what we actually eat.

Work has already been done by some food and drink companies to reduce the sugar content of some products. This has mainly been achieved by reducing the amount of sugar in some sugar sweetened drinks (reformulation) while maintaining the 'sweetness' of the product through the addition of a no/low calorie sweetener and, for some confectionery, by portion size reduction. There have been some notable successes[46] but sugar intakes in England remain high.[47] In addition, we estimate that on average adults are consuming between 200 to 300 excess calories per day.[i]

A key question is what approach to reducing sugar levels in products would be likely to be successful in achieving an overall reduction in the sugar intake of the English population? We have looked at a number of different areas that would help form an answer – the outcomes from the individual workstreams are set out below.

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i Scientific Advisory Committee on Nutrition (SACN). Dietary Reference Values for Energy. 2011. London: TSO Revised population Estimated Average Requirements (EAR) table 16 based on prediction equations for BMR

Work to investigate issues around reformulation

Salt reduction case study

The salt reduction case study (Annexe 5a) gives details of the key approaches to working with industry to reformulate foods and reduce salt levels. It demonstrates that this programme of reformulation has been effective at lowering the UK population's consumption of salt, with a significant reduction in intakes having been seen over 10 years.[48] The key elements that enabled success were:

- taking action across the food chain, although there was limited input from the out of home sector particularly in the early days of the programme. Working in this way has the advantage of keeping the playing field even and does not affect competitiveness
- working on the basis that salt was taken out of most foods and not replaced or added back elsewhere
- setting targets for levels of salt in a wide range of foods and refreshing these on a regular basis so that salt levels were gradually moved downwards
- monitoring effectively and consistently across all participants. The universality of this approach allowed the effect of salt reduction to be estimated and checked

The programme also included engagement with other countries that were considering implementing a similar programme, as well as through the European Commission and the World Health Organization[49] which, with an increasingly international food chain, was important in ensuring progress.

Success in the out of home sector has been more limited and engaging all kinds of restaurants including fast food outlets, takeaways and fast food restaurants, canteens, coffee shops, cafes and their suppliers more widely from the outset would have resulted in salt intake levels being reduced further. This is particularly important because this sector now accounts for a large proportion of the food we eat – around 18% of meals were eaten out of the home during the year ending March 2015, a 5% increase on the previous year,[50] with 75% of people reporting eating out or buying takeaway food in 2014 (compared to 68% in 2010).[51]

The lack of engagement by many in this sector is a point of concern raised by both food manufacturers and retailers, who perceive an uneven playing field between their products and those from the out of home sector in terms of salt levels present and the resulting taste and preferences (eg a pizza purchased in a supermarket is likely to have a lower salt content than a comparable product purchased from and/or eaten out in a restaurant or takeaway).

Portion size

Portion size is also an important issue (this was not considered as part of the salt reduction work previously). Evidence on trends in portion size in the UK is limited but reviews of the available data suggest that for some product types (such as fast foods and ready meals) there is evidence of increasing portion size over time.[52,53] A recent Cochrane review and meta-analysis found that increasing portion sizes results in more calories being consumed and estimated that eliminating larger-sized portions from the diet completely could reduce energy intake by up to 16% among UK adults. [54,55] A cap on portion sizes for relevant foods in both the retail and out of home sectors is, therefore, a clear way of reducing both sugar and calorie intake. There are some good examples of work in this area, such as the reduction in size of some chocolate bars to provide fewer than 250 calories per bar,[56] but further work could be done to reduce these as well as additional work to tackle the ubiquitous large portion sizes that remain.

Secondary analysis of food survey data to assess the potential impact of reformulation on sugar intakes

Using data from the National Diet and Nutrition Survey – a dietary survey of the UK population that gathers data on the foods people eat and uses this to calculate the amount of individual nutrients they consume – our analysis looked at the impact of reducing the amount of sugar coming from key foods contributing to intakes (biscuits; buns, cakes, pastries, fruit pies and puddings; sugar and chocolate confectionery; yogurt, fromage frais and dairy desserts; breakfast cereals; table sugar), and sugar sweetened drinks. The results suggest that an assumed 50% reduction in the amount of sugar coming from these foods, through reformulation and/or reduced consumption, would lower mean sugar intakes to about 9% of energy for adults (from approximately 12%); and to about 10% of energy for children and teenagers (from around 15% for both groups). It should be noted that there is scope for reformulation in many products (eg sugar sweetened drinks, yogurts, ice cream etc). There are, however potential technical issues with reducing levels of sugar in some products (such as biscuits). In these cases, manufacturers taking action to reduce portion size, and individuals making changes by choosing smaller portion sizes or cutting higher sugar foods out of the diet completely may be more effective strategies for reducing sugar intakes. The impact of such strategies has not been taken into account in the modelling. More detail is provided at Annexe 5b.

Literature review of 'sweetness'

The salt case study shows that the gradual changes made to the salt content of food, without replacement with lower-sodium alternatives, have gone largely unnoticed by consumers and have led to an adjustment in the nation's palate towards a generally lower salt taste in the food that we buy. For example, since the 1980s the salt level in bread has been reduced by over 40%, with around a 10% reduction made in just the last three years,[57] but it continues to be a staple part of our diet. The food industry response to sugar reduction has, so far, been different – sugar levels in products have been reduced in larger steps, potentially through the aim to make a claim on pack about the change that has been made[j,58] – and the sweetness has generally been maintained through the addition of no/low calorie sweeteners. Sweeteners can help to reduce the sugar content of foods, and the number of calories present and can also make a food or drink less harmful to teeth.[59] Although sweeteners are safe[60] some consumers remain concerned about their use.[61]

The PHE review (see Annexe 5c) confirmed that we have an innate desire for sweet foods, which seems to be heightened in childhood relative to later life. While there is evidence of the ability of the palate to adapt to a lower salt taste,[62,63] the review found only one paper in relation to adaptation of palates to sugar.[64] Personal reports, however, suggest that it is relatively easy to adapt to a less sweet taste, such as giving up sugar in tea or coffee. In addition, while this is not considered within the review, some soft drinks manufacturers have informally reported that consumers do not seem to detect reductions of around 4% in the sugar content of drinks, where these have not been replaced with sweeteners.[65] It's important to note, however, that larger reductions could be achieved in soft drinks with the use of non/low calorie sweeteners. Finally, as the evidence considered by SACN also shows, the review found that replacing foods and drinks sweetened with sugars with those sweetened with no/low calorie sweeteners can be useful in the management of energy intake and weight.

Existence of the fat/sugar see-saw

Stakeholders sometimes express the concern that products that are low in sugar will have a higher total fat content than standard products (sometimes called the 'fat/sugar see-saw'). To enable consideration of this, using online data sources with a detailed look at their labels, PHE carried out a review of food products to investigate the relationship between the sugar and fat content of standard products compared to their reduced/low/fat free equivalents across a limited range of food categories (Annexe 5d). For the product categories examined (biscuits; cake bars; desserts; cereal bars; fruit

j A claim stating that the content in one or more nutrients has been reduced may only be made where the reduction in content is at least 30% compared to a similar product.

based yogurts; dips; mayonnaise; salad cream; coleslaw; potato salad and fresh ready meals) there was no overall trend for reduced fat products to contain more sugar than their standard equivalent products. There was, however, substantial variation between product categories and manufacturers and within individual categories. When looking at the individual product comparisons reduced fat products contained more (25%) or less (36%) sugar or there was no difference (38%). However, care must be taken when interpreting the data due to the limitations of the work.

Development of new example menus to meet food and nutrient based standards

There are a number of other areas where underpinning activity will also contribute to improving levels of knowledge and actions to consume a healthy, balanced diet. One such example is the provision of food and drink within the public sector. This sector spends around £2.4bn – approximately 5.5% of UK food service sales – each year procuring food and catering services for our schools and hospitals, the armed forces, central and local government, government agencies and prisons and courts.[66] This provides a large-scale opportunity, with significant purchasing power, to influence the diets of those that use these services – whether they are visiting, working or living within these facilities – and the overall food chain to provide lower sugar (and lower salt and fat) choices to help the population meet dietary recommendations.

To this end, PHE has developed additional supportive tools and materials to help those who must meet, or who voluntarily adopt, the government buying standards for food and catering services (GBSF) and to support those who wish to go further than the minimum requirement. This includes the development of menus suitable for a range of settings, including the public sector, which demonstrate that the SACN 5% recommendation can be achieved. Examples of two individual daily meal plans that meet all dietary recommendations including the new SACN recommendations for sugar (and fibre) are included at Annexe 5e.

It is mandatory for central government departments to procure food in line with the GBSF. Latest reports show that, of 22 government departments in total, 10 report meeting GBSF and nine do not. For the remaining three departments, these standards are either considered not applicable or they have not reported. Local authorities do not currently report on meeting the GBSF.

Schools have been expected, since January 2015, to also use the GBSF, alongside the school food standards, to help reduce the levels of sugar (as well as salt and saturated fat) in children’s diets. This excludes academies set up between September 2010 and July 2014 although these are being asked to make a voluntary commitment to meet the requirements. There are no mandatory food or nutrient standards for pre-schools and nurseries.

Hospital food standards for the NHS are written into the NHS Standard Contract 2015/16[67] which governs the provision of NHS services including the GBSF. Compliance is monitored through an annual 'snapshot' assessment of a range of non-clinical services for which compliance is high and which includes questions relating to food and hydration. Personal observations, however, suggest that most of the public sector does not procure or sell predominately healthier food and drinks.

Summary

The evidence suggests that working to reduce the sugar content of products across the food chain would be likely to reduce sugar intakes, and the greater the universality of this, the greater the likelihood of success. It is easier to achieve a healthy diet if the choice offered to us in shops, restaurants, takeaways and fast food restaurants, cafes and coffee shops and at work and in our institutions contain on average less sugar and if unhealthy choices are limited. This is because the majority of our purchases and eating decisions are automatic and habitual[68] and influencing the food we buy and making healthier choices easier is critical if we want to see progress in reducing sugar intakes.

The evidence suggests that sugar reduction could be achieved through:

- reduction in the sugar content of the foods we buy through reformulation and portion size reduction
- universal public food procurement, provision and sales of healthier foods

Implementing a broad, structured and well monitored programme to encourage gradual reductions in the sugar content of food and drinks (ie reformulation), through setting targets to enable levels to be gradually moved downwards, would be likely to secure significant reductions in sugar intakes. **Simultaneous reductions in calorie content** should be encouraged wherever possible, which could be achieved via a variety of means including **reductions in portion size** where appropriate. It should target products with the biggest market share and work across the whole of the food chain (manufacturers, retailers and the out of home sector) from the outset in order to result in substantial reductions in the contribution that sugar makes to the diet. Such a programme would be enhanced by international collaboration through multinational businesses and other relevant organisations.

As sugar reduction does not always result in a reduction in the number of calories in a food (for example, sugar may just be replaced with starch in some products such as cakes and biscuits due to technical challenges in achieving substantial sugar reduction) it may be more appropriate to work towards reducing the proportion of sugar in a product. This would, in some cases, reduce the calorie content and may also improve

the overall balance of the diet. SACN's evidence shows that a higher proportion of sugar in the diet increases the risk of consuming too many calories so this approach would help reduce this risk.

When undertaking reformulation activity it would be prudent to ensure any reductions made to the sugar content of foods and drinks do not result in a higher fat or salt content. In addition, reductions could be achieved with or without sugar replacements such as no/low calorie sweeteners, as these have been found to be useful in weight management while maintaining taste, although it would seem logical that the latter approach would have the advantage of allowing palates to adapt to a less sweet taste. This 'adaptive' approach would also suit some people's preferences to avoid no/low calorie sweeteners, but would need to be weighed against the fact that larger step reductions in the sugar content of some products could be achieved sooner with their use.

The out of home sector has specific opportunities to contribute to sugar reduction. The possible options for action are many and varied but include removing options allowing unlimited soft drinks refills – which is common in the US and increasingly happening in England – and limiting cup sizes, removing sugary drinks options from children's menus and offering sugar free/diet drink by default; limiting the size of higher sugar foods like puddings and cakes and offering fresh fruit instead; and setting a cap on the amount of sugar that can be provided through a 'meal deal'; as well as taking sugar off tables and buying in prepared foods (eg baked beans) that are lower in sugar.

Significant opportunities exist to influence and improve the diet and health of those that use public sector facilities through the procurement, provision and sale of healthier food and drinks across the public sector, including national and local government and the NHS. A simple way to do this would be through the consistent adoption of GBSF (which many government departments do not report meeting), supported by more consistent monitoring and the possible strengthening of the standards themselves. Example menus should also encourage achievement of the new recommendations for sugar and fibre.

Knowledge, education, training and tools

Change4Life

A key commitment PHE made last year was to encourage reduction in sugar intakes through its childhood obesity prevention campaign Change4Life (C4L). Health marketing is important as both a motivator and enabler for consumers to change their own and their families' diets and can help underpin action by others such as the food industry. It is also a key part of systems leadership work on obesity.

C4L ran a digital marketing package in June 2014 to accompany publication of the draft SACN report and PHE's 'Sugar reduction: Responding to the challenge' in which the key swap was from sugary fizzy drinks to water, lower fat milks and sugar-free or no added sugar drinks. It used a number of different routes to get these messages across including a leaflet, through social media and on the radio.

In January 2015, PHE launched the C4L 'sugar swaps' campaign, which ran throughout that month. It featured two TV ads showing how easy it is to swap to lower sugar drinks and after school snacks and also included radio, digital and outdoor advertising; public relations and media partnerships; work with 25 national food retail and manufacturing partners and all 152 local authorities as well as community events and schools programmes. Full details of both of these campaigns are included at Annexe 6a.

As well as these product specific campaigns, C4L also run public information TV fillers[k] aimed at improving understanding of the nutrition information on food labels.

Evaluation of this year's campaign demonstrated that it was successful in raising the profile of the key messages and getting more people involved and taking action; and that there have been some positive short-term changes in purchasing habits. However, because the nature of such campaign activity is for it to be run only in short bursts it could be concluded that resulting dietary changes are also likely to be only short-term (ie during the life of the campaign and for a short while afterwards) because the supporting messages and encouragement to change are not always present to the same degree. In addition, the food industry continues to bombard us with advertising for high sugar foods and drinks. The difference in advertising spend highlights this contrast – the UK food industry spent £256 million promoting 'unhealthy' foods sold in retail alone in 2014 compared to a total C4L spend the same year of just £3.9m.

k TV fillers are public information films that broadcasters air for free in slots that they have not been able to sell commercially

It is important, therefore, that we continue to raise awareness of concerns around sugar levels in the diet to the public, health professionals, employers and the food industry etc., to encourage action to reduce intakes and **to provide practical steps to help people lower their own and their families' sugar intake.** To help achieve this goal some steps are already being taken:

- we have produced an easy to use summary of SACN's work and findings on sugar and sugar containing foods – "Sugar – Why 5%?"[69] – to help professional and non-professional audiences alike make the case for sugar reduction
- we have developed new, easy to understand maximum sugar intake figures, based on the new SACN recommendations, as set out in table 3

Table 3. Maximum sugar intake for different age groups[l]

Age	Maximum sugar intake	Sugar cubes	Teaspoons
From 11 years	no more than **30g** of sugar per day	**7 cubes**	**6-7 teaspoons**
7 to 10 years	no more than **24g** of sugar per day	**6 cubes**	**5-6 teaspoons**
4 to 6 years	no more than **19g** sugar per day	**5 cubes**	**4-5 teaspoons**

- a short phase of C4L activity was run to support publication of the SACN report that provided information to families on what they can do to help reduce the amount of sugar they eat

C4L will continue to develop plans for the next phase of the campaign, which will launch next year, and the extension of messages around sugar consumption to additional audiences where appropriate, to further support the new guidelines around sugar consumption. C4L support material will continue to provide advice on improving the overall balance of the diet, increasing fibre intakes and using the nutrition information on food labels.

l Calculated as average 5% of energy requirements and weight converted to sugar cubes (4g sugar cube as currently available).
at age 4 to 6 years energy recommendations = 1434 kcal/6.0 MJ;
at age 7 to 10 years, energy recommendations = 1769 kcal/7.4 MJ;
at age 11 and over energy was capped at 2250kcal/9.4 MJ to help address issues of overweight and obesity.
(SACN, dietary reference values for energy, 2011 https://www.gov.uk/government/publications/sacn-dietary-reference-values-for-energy)

Work to refresh ’5 A Day’ and eatwell campaigns

Review of ‘5 A Day’

The government recommends eating at least five portions of a variety of fruit and vegetables each day as this provides substantial health benefits. The government’s ‘5 A Day’ scheme was launched in 2003 to help people recognise the 5 A Day message and to introduce consistency in its use on packaging or promotional materials by the food industry, public health departments and the voluntary sector. Work to strengthen advice on fruit juice and smoothie consumption has been delivered while work to assess how ‘5 A Day’ might apply to composite dishes (such as ready meals) is ongoing.[70] Further details can be found at Annexe 6b. As part of the work to refresh the 5 A Day campaign:

- PHE conducted a rapid review of the evidence to assess the relationship between fruit juice consumption and health, including cardiovascular disease, since the 5 A Day messaging was accepted. From the limited studies identified, there is no evidence to suggest fruit juice should be excluded from 5 A Day, nor is there evidence of detrimental effects of consuming fruit juice in terms of heart disease. Advice has been strengthened to limit consumption of fruit juice to one portion a day. This is, no more than 150ml in total (from fruit juice, fruit juice contained in smoothies, or both) and to consume this at mealtimes to reduce the risk of tooth decay. This advice is actively publicised through Change4Life and the NHS Choices website. Further strengthening of advice on smoothies is being considered
- PHE has published advice received from the external reference group for 5 A Day on the possible extension of the government logo to include composite foods[71]. We are reviewing the group’s advice to PHE and will then make a decision on what opportunities there may be to extend the government 5 A Day log to include composite foods. This will inform discussions with UK health departments on the way forward
- options are being considered for a refreshed 5 A Day logo and licensing process to facilitate and encourage wider use

Challenges remain around the adoption of the portion size recommendation for fruit juice. Large cartons generally make it difficult to know the size of a portion without measuring it and small cartons (aimed at the lunchbox market) predominantly contain more than the 150ml (generally around 200ml). **There is an opportunity for industry to make it easier for parents to give their children just the recommended 150ml portion** whether this is by marking portion sizes on the side of cartons or other uses of labelling to highlight this; or by reducing the size of small cartons to correspond with the recommended portion size.

Review of 'eatwell'

In autumn 2014, PHE established an external reference group to consider the impact that the draft SACN recommendations may have on the eatwell plate. Work to date has included modelling using a variety of approaches and consumer research to ensure the model remains understandable and meaningful. A second phase of consumer research is underway to further develop the refreshed model based on this earlier work with a view to launch a refreshed image in early 2016.

All documents to date have been shared publically[72] and future papers will be published when available. Once PHE has completed the review, it will provide advice to the Department of Health on any potential changes to official dietary recommendations, including the eatwell plate. More detail is included at Annexe 6b.

Training in diet and health for the wider workforce

There are many occupations and individuals who have the potential to influence the diet and health of those they have contact with. Evidence suggests that many of these, such as child minders, fitness instructors, caterers and those working in care homes, and some frontline local authority staff, currently receive very little, if any, training in these key topics. A large number of courses offering training in diet and health exist but the availability, cost and quality of such courses is hugely variable, with very few of these being accredited by reputable, professional bodies. The training of non-nutritionists is therefore an area that requires consideration and development. The main aims of this strand of work were to:

- identify the different occupations or individuals who might benefit from training in diet, health and nutrition and the organisations that have a role to play in the delivery of this
- work with the Association for Nutrition to devise a competence framework in diet, health and nutrition for non-professionals working in the fitness, leisure and catering sectors
- identify local authority case studies where training in diet and health had been given to the wider workforce
- engage in discussions on general teacher training around diet and health, and identify where such information is passed on to pupils outside of structured, standard learning

Further details are provided at Annexe 6c.

Accredited training in diet and health is not routinely delivered to many of those who have opportunities to influence others' food choices. Adoption of the competence framework in diet and nutrition for those working in the catering, fitness and leisure sectors – along with wider roll out of accredited training – would be likely to increase relevant knowledge and lead to improvements in diet such as reductions in the amount of sugar consumed.

Local activity

Working with local authorities is a key part of PHE's remit. They have the opportunity to improve the knowledge and practices of their residents in relation to diet and health in ways that national programmes simply cannot. In developing this evidence package it has been clear that local authorities have strong ambitions to enable people to adopt a healthier diet. There are many good examples of local initiatives, and PHE has supported one local authority as a pilot 'sugar champion'.

Local examples

Eleven case studies of local authority activity were identified and their efficacy assessed. Two were considered to be examples of 'good' local practice, both of which were healthy eating courses involving an increase in both knowledge and practical skills. A number of other projects were noted as 'promising practice' including locally-prestigious catering awards and initiatives focused on improving the diet of minority groups or people from very deprived backgrounds. For the full report see Annexe 7a.

Sugar champion

As a pilot 'sugar champion' West Sussex County Council has taken forward work across five different areas: raising awareness through local events focused on the Change4Life sugar swaps campaign; developing an initiative to reduce consumption of sugar sweetened drinks by young people; developing food procurement guidelines for local authority catering in line with government buying standards for food and catering services; improving the vending offer in public spaces including leisure facilities and council offices; and developing a network of local advocates. Despite a number of challenges in setting up the work initially, good progress has been made in each area. Other local authorities are now considering setting up similar programmes, in discussion with West Sussex. For the full report see Annexe 7b.

Overall summary of evidence and key actions

A wealth of data and evidence has been presented in this report setting out current sugar intakes, the impact of high intakes on health, why reducing these would improve health and the benefits of reduced sugar intake in addressing health inequalities across society, as well as reducing burdens on the NHS. This review of the evidence suggests a range of areas in which action, when taken together, could reduce the amount of sugar we eat.

While consumer messaging and education and the provision of clear information are important, and people's level of concern around sugar is high, a number of independent reports – including Foresight[73] and those from McKinsey[74] and the Organization for Economic Cooperation and Development (OECD)[75] – have highlighted that in order to be effective in tackling obesity, and particularly to help the poorest in society, activity needs to go beyond health messages and information to consumers. Actions need to be taken to address the structured drivers of obesity. In the case of achieving sugar reduction, this would mean focusing on the environmental drivers including advertising and marketing, price promotions, sugar levels in food and food availability.

The whole food environment and culture has changed slowly over the last 30 to 40 years. There are now more places to buy and eat food which is, in real terms, cheaper, more convenient, served in bigger portion sizes and subject to more marketing and promotions than ever before. Add to this a seemingly continually expanding out of home sector (including restaurants, takeaways and fast food restaurants, cafes and coffee shops) where, overall, less action has been taken to improve the food offered than through retail and manufacturers. It is clear that health campaigns and information to consumers, such as that provided through Change4Life and on food labels, cannot deal with this alone and a greater degree of action is needed.

The UK has led the world on the diet and health agenda in areas such as salt reduction, action in schools to improve the food provided and the nutrition criteria that govern TV advertising to children. We now look to do the same with action to reduce sugar intakes.

There are many cues that affect food choice and purchases. It is clear from the evidence described in this report that marketing and promotions in stores are extensive, deep and effective, and both are heavily weighted towards less healthy products. It is likely that they are significant contributors to sugar consumption. **The evidence strongly suggests that reducing the volume of marketing to which children in England are exposed would improve their food preferences, choices and consequently their diets. Rebalancing and limiting the volume of promotions**

away from high sugar foods and drinks, and discouraging pricing that incentivises the purchasing of larger pack or portion sizes, would also benefit the balance of the diet by reducing the amount of sugar purchased.

In addition it is likely that **price increases on specific high sugar products like sugar sweetened drinks, such as through fiscal measures like a tax or levy, if set high enough, would reduce purchasing at least in the short term**. It is not possible to compare the impact of price increases achieved by, for example, the introduction of a tax on sugar sweetened drinks, with other factors such as the demonstrated effects of marketing on children or the impact of promotions in store on purchasing habits. Nevertheless, the general tone of the available evidence is that the effect of restrictions on marketing and promotions may be greater than those from fiscal measures because marketing and promotions tend to be more universal (affecting many products) and have a potentially greater impact on each product than the generally limited range of products to which taxes have been applied to date. It is also our sense that some may prefer a tax on a specific product – such a sugar sweetened drinks – rather than more widely applied restrictions being made to price promotions and marketing as this would affect more products.

We know that most of our food choices are routine or habitual. The sugar content of food remains high despite some work by industry on a small number of foods and we know that 'healthy' ranges of products, including those that supply much of our sugar intakes, will only ever have limited appeal. **Universal reductions in the sugar content of foods offered to us in shops, restaurants, takeaways and fast food restaurants, cafes and coffee shops, in our institutions and at work, therefore play a vital role in helping us reduce our sugar intakes as it makes healthy choices easier**. There are two key ways this could be done:

i. **through reduction in the sugar content of the foods we buy through reformulation and portion size reduction**
ii. **through universal public food procurement, provision and sales of healthier foods**

Reducing the sugar levels in food and portion size control do not rely on behaviour change by individuals to achieve dietary improvement. This, together with positive changes to the food offered within public sector buildings and spaces, helps to make healthier choices easier.

Actions on promotions, marketing, reformulation and portion size would help all consumers equally. While health marketing is an important enabler it generally has only short-term effects, tends to help those that are already engaged with health and may therefore only serve to widen health inequalities.

Action to improve training in diet and nutrition will help to increase relevant knowledge among those who have opportunities to influence the food choices of others.

Key actions to take

It is unlikely that a single action would be effective in reducing sugar intakes. The evidence broadly suggests that a structured approach, involving restrictions on price promotions and marketing, product reformulation, portion size reduction and price increase on unhealthy products, implemented in parallel is likely to have a more universal effect. As sugar intakes are higher in lower income groups, reducing levels of sugar in foods through reformulation may have the biggest effect on this group. Our analysis of the evidence suggests that a successful programme could include the following levers:

1. Reduce and rebalance the number and type of **price promotions in all retail outlets including supermarkets and convenience stores and the out of home sector (including restaurants, cafes and takeaways)**
2. Significantly reduce opportunities to **market and advertise high sugar food and drink products to children and adults across all media including digital platforms and through sponsorship**
3. **The setting of a clear definition for high sugar foods** to aid with actions 1 and 2 above. Currently the only regulatory framework for doing this is via the **Ofcom nutrient profiling model, which would benefit from being reviewed and strengthened**
4. Introduction of a broad, structured and transparently monitored programme of **gradual sugar reduction in everyday food and drink** products, combined with **reductions in portion size**
5. Introduction of a **price increase of a minimum of 10-20%** on high sugar products through the use of a tax or levy such as on **full sugar soft drinks**, based on the emerging evidence of the impact of such measures in other countries
6. Adopt, implement and monitor the government buying standards for food and catering services (GBSF) **across the public sector, including national and local government and the NHS** to ensure provision and sale of healthier food and drinks in hospitals, leisure centres etc
7. Ensure that accredited training in diet and health is routinely delivered to all of those who have opportunities to influence food choices in the **catering, fitness and leisure sectors** and others within local authorities
8. Continue to raise awareness of concerns around sugar levels in the diet to the public as well as health professionals, employers, the food industry etc, encourage action to reduce intakes and **provide practical steps to help people lower their own and their families sugar intake**

The success of future action depends on the engagement of a wide range of people and organisations including PHE, other central and local government bodies, stakeholders across the food and advertising industries and elsewhere, those responsible for training and development, and consumers. Actions can be started and continued by individuals, families and organisations as the wider debate and plans for implementation develop.

Achieving the SACN recommendation would provide clear benefits – it is estimated that if achieved over 10 years the NHS would save £500m per year. It is important to note that any significant progress to reduce sugar intakes would yield benefits.

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