

The Facts on Sugar

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Foreword

Sugar is the hot topic in the nutrition world. It is now recommended that our intake of sugars should be less than 5% of our total energy intake [1], yet millions in the UK and around the world regularly exceed this.

What is most concerning is how far sugar has invaded the modern diet. Bread, breakfast bars, table sauces, low-fat products, smoothies and soft drinks are often full of sugar.

So how do we combat this stealthy substance that is widening our waistlines and harming our health?

To start with, we can ***give up loving pop.***

Nicola Calder

Alex Holt



Obesity in the UK

Across the UK, obesity levels are rising. Nearly a quarter (22.5%) of 4-5 year olds and just over a third (33.5%) of children aged 10-11 year olds carry excess weight.

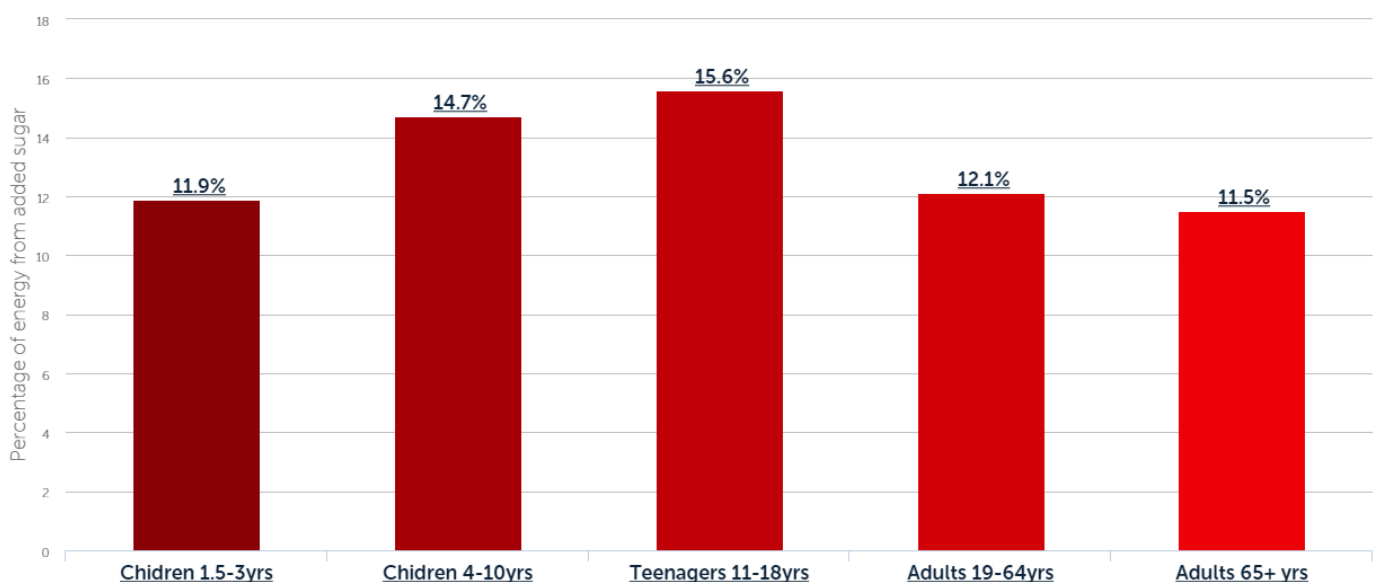
This trend continues into adulthood with 63.8% of adults identified as being overweight or obese. Those living in the most deprived

areas are at greater risk of being overweight or obese [2].

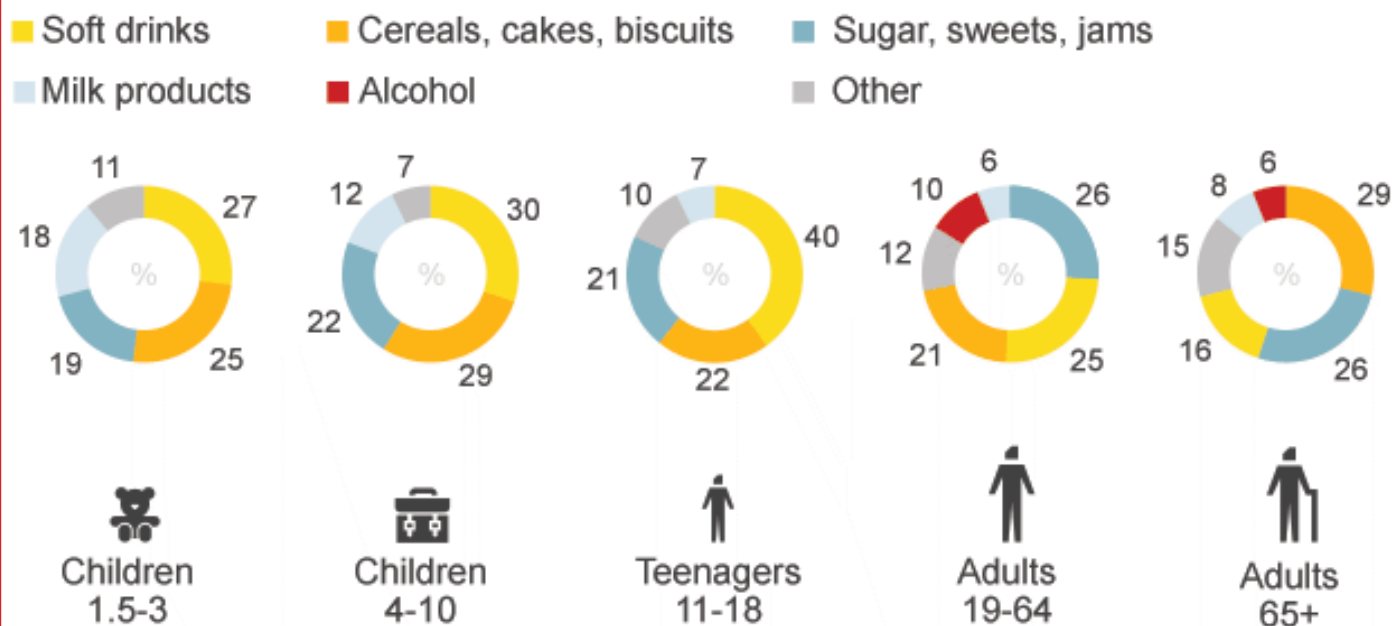
Health problems associated with being overweight or obese cost the NHS more than £5 billion every year [3]. Sugar is a major contributor to the obesity epidemic with Britons on average eating 700g of sugar a week [4]—that's 140 teaspoons per person and a whopping 2240 calories.

Teenagers consume the most sugar; 74.2g sugar per day

Daily added sugar intake, by age groups



Where different age groups get their added sugar from



Source: National Diet & Nutrition Survey, rolling programme 2008-12

(contributing to almost double the amount recommended for energy), closely followed by children aged 4–10 years, (consuming 60.8g sugar per day) and adults aged 19–64 years, 58.8g sugar per day.

Sugar Guidelines

Sugar in numerous forms has been creeping into our bread, our table sauces and a huge variety of soft drinks by the teaspoon (see appendix 1).

Both the WHO and the Scientific Advisory Committee on Nutrition (SACN) have proposed new recommendations that sugars added to food by the manufacturer, or sugars which are naturally present in syrups and unsweetened fruit juices should account for no more than 5% of our energy intake, half that of current recommendations [5].

SACN have proposed that the UK adopts the definition of



EU labelling regulations have recently replaced GDA (Guideline Daily Amount) with RI (Reference Intake) however the principles behind how these values are

Energy or Nutrient	RI
Energy	2000kcal
Total Fat	70g
Saturates	20g
Carbohydrates	260g
Sugars	90g
Protein	50g
Salt	6g

‘free sugars’ in place of the current term ‘NMES’ (non-milk extrinsic sugars).

They define ‘free sugars’ as:

“all monosaccharides and disaccharides added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrups and unsweetened fruit juices.”

determined remain the same.

Lowering the consumption of ‘free sugars’ to around 5% of daily dietary energy intake would result in a limit of

Age	Max Sugar Intake	Sugar Cubes	Teaspoons
11 +	≤ 30g	7	6 - 7
7—10	≤ 24g	6	5 - 6
4—6	≤ 19g	5	4 - 5

Maximum sugar intake for different age groups.

PHE (2015). Sugar Reduction: The evidence for action. [6].

30g—approximately 7 teaspoons of sugar for an adult (see appendix 2 for sugar swapping advice) [6].

Sugar, Health and Metabolism

There are three primary macro-nutrients: protein, fat and carbohydrate that can be

1g carbohydrate	4kcal
1g proteins	4kcal
1g fat	9kcal
1g alcohol	7kcal

broken down by the body in order to produce energy (kcal or calories are a measurement of energy). Although alcohol can provide energy, it is not essential and is therefore not a macronutrient.

Carbohydrates are classified into two basic groups, simple and complex.

Simple carbohydrates are either monosaccharides (one sugar molecule) such as **glucose** and **fructose**; or disaccharides (two sugar molecules) such as **sucrose** (regular table sugar – composed of equal parts glucose and fructose) and **lactose** (sugars found in milk which are made up of **galactose** and glucose).

Complex carbohydrates are found in potatoes, pasta, bread and rice in the form of starch and fibre.

Many processed foods are surprisingly high in ‘added’ sugar which contain these simple carbohydrates.

It is these ‘free’ or ‘added’ sugars which are of most concern.

It is believed that the liver handles high intakes of sugar

in a way that is damaging to our health, especially if we are overweight or not physically active. This could lead to an increased risk of diabetes, heart disease and other health problems.

Whilst it is necessary to make sure you aren't exceeding the total recommended daily amount of sugar, naturally occurring sugars probably aren't going to be a problem unless on a restricted diet, e.g. a low carbohydrate diet to control **diabetes**.



Sugar and Weight Gain

Different foods affect the body in different ways; eating too much sugar can lead to an excess intake of calories which can lead to weight gain as sugar is easily converted into fat in the body.

Glucose is absolutely vital to life and is an integral part of our metabolism. Our bodies produce it and we have a constant reservoir of it in the bloodstream. Every cell in the body can use glucose for energy and it is essential fuel for the brain. If we don't get enough glucose from the diet, our bodies produce what we need out of proteins and fats.

However, excess glucose consumption leads to weight gain via two routes:

1. When the liver's sugar storage capacity is exceeded

the excess glucose is converted by the liver into fatty acids and returned to the bloodstream, this is taken throughout your body and stored as fat (adipose cells) which leads to weight gain.

2. When the body produces excess insulin the body's fat burning process is shut down so that the glucose that has just been ingested can be immediately used for energy. Then, insulin transports all that glucose to the muscles. However, as soon as the muscles energy stores are full, the excess sugars are converted to fat. This process also leads to an increase in appetite.

Fructose, however, is different. Although produced during the metabolism of carbohydrate there is no

biological need for dietary fructose. Very few cells in the body can make use of it except those in the liver. When we eat a lot sugar, most of the fructose gets metabolised by the liver. There it gets turned into fat, which is then secreted into the blood.

Unlike glucose, consuming fructose does not trigger the release of insulin. Some studies have also shown



when eaten as part of a meal, fructose does not suppress ghrelin (a major appetite stimulating hormone) leading to continued feelings of hunger which is believed to induce weight gain through overconsumption [7].

Sugar in Alcohol

Alcohol generally has a low sugar content as the sugar in the fruit juice / grain / vegetable turns to alcohol during the fermentation process. Whatever sugars are left following the fermentation process contribute to the final sugar content, which will vary from one drink to another.

For example, a dry wine has little residual sugar, whereas a sweet wine can have quite a lot. Spirits such as vodka, gin, rum and whisky have nothing

left but the alcohol, so no (or very little) sugar. However the mixers often added to spirits are very sugary. Liqueurs also have sugar added.

Alcohol is high in calories at 7kcal per gram compared to 4kcal for protein or carbohydrate.

The body is unable to store alcohol in its existing form so metabolises it to produce energy before carbohydrate or fat.

Alcohol also lacks nutritional value and can cause fluctuations in blood sugar which can increase appetite.

Sugars and Dental Health

Tooth decay affects 28% of five year-old children [8] and 31% of adults in England [9], consumption of sugary foods

and drinks is the chief cause. Tooth decay is the major cause of pain and suffering, and the main reason for administering anaesthesia among children. The NHS spends around £3.4 billion on dental treatment a year [10].

Each time you eat sugar, bacteria in the mouth produces acid which attacks the enamel on the teeth, causing sensitivity and tooth decay.

By limiting sugary foods and drinks to mealtimes you can reduce the number of times teeth are attacked by this acid.

Water and milk are the best drinks to consume in-between meals to reduce dental erosion and decay.



Sweeteners

Artificial sweeteners tend to have little or no calorific value and are therefore not associated with weight gain.

However, there is some emerging evidence to suggest that artificial sweeteners may not aid weight loss.

Please refer to the **gulp.** downloadable resource on artificial sweeteners for further information.

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A word cloud of 56 different names for sugar, including: Sugar, Fructose, Glucose, Sucrose, Maltose, Honey, Caramel, Golden syrup, Maple syrup, Corn syrup, High Fructose Corn Syrup, Invert sugar, Castor sugar, Galactose, Lactose, Brown sugar, Refiner's syrup, Demerara sugar, Dextrose, Ethyl maltol, Maltodextrin, Golden sugar, Sorghum syrup, Barley malt, Diastatic malt, Buttered syrup, Carob syrup, Molasses, Mannitol, Fructose, Icing sugar, Golden syrup, Free Flowing Brown Sugars, Muscovado, HFCS, Corn syrup solids, Powdered Sugar, Sorbitol, Turbinado sugar, Dehydrated cane juice, Yellow sugar, Confectioner's sugar, Fruit juice concentrate, Grape sugar, Raw sugar, Cane juice, Rice syrup, Beet sugar, Dextran, Treacle, Glucose solids, Barbados sugar, Cane sugar, Panocha, Sucrose, and Malt.

The 56 names of Sugar

There are a number of ways to identify the sugar content of processed foods and drinks. Unfortunately very few food manufacturers refer to 'sugar' on the label.

They often use terms that are harder to decode; anything ending in 'ose' such as glucose, sucrose, fructose, lactose and maltose will be a form of sugar, as are honey, agave, molasses and syrups.

If the food item does not specify the amount in grams, the higher up the ingredient list, the more sugar the products contains.

Understanding Food Labelling

When measured in teaspoons (in tea or coffee for example) or grams (in a homemade cake) it is easy to work out the amount of sugar added to food. High sugar foods include many biscuits, cakes, puddings, sweets, chocolate and flavoured yoghurts.

Drinks are also a major source of sugar. But many processed products, even those that you'd never suspect, contain sugar. For example, ketchup and other condiments, tinned soups and breakfast cereals.

There are a number of ways to identify the sugar content

of processed foods and drinks. One way is to identify the different names of sugar, as seen on the previous page.

Another option is to look at the nutrition information panel on the food packaging and refer to the line which says 'carbohydrate of which sugars'. This however includes natural and added sugars.

Front of pack nutritional information labels often give the amounts of sugar per 100g of a products and provides a colour coding to indicate if the level of the sugar in a food item is low, medium or high.

See the table below for more information.

	Low (Green)	Medium (Amber)	High (Red)
Food (Total Sugars)	≤ 5.0g/100g	> 5.0g and ≤ 22.5g /100g	> 22.5g/100g
Drinks* (Total Sugars)	≤ 2.5g/100ml	> 2.5g to ≤ 11.25g/100ml	> 11.25g/100ml

NB. *The values change for drinks

**There is also additional criteria to indicate a high-sugar cut-off point to show food and drinks where a normal portion would lead to eating/drinking a high level of sugar e.g. a can of drink or a ready meal.



How much Exercise?

The table below shows the amount of exercise an average healthy woman would need to use the calories consumed from the following food and drink.

Items	Kcals, Sugar	Exercise needed
Can of Coca-Cola	140 kcals, 39g sugar	23 minutes cycling
Dairy Milk (45g) chocolate bar	240 kcals, 25g sugar	26 minutes swimming
Large Big Mac Meal with Coke	1130 kcals, 62g sugar	144 minutes jogging
Double Scotch Whisky	112 kcals, minimal sugar	17 minutes fast walking

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Appendix 1

Sugar content of Food and Drink

BREAD PRODUCTS	Sugar (g) per 100g	Sugar (g) per (typical) serving
Kingsmill Gold Wholemeal Bread	3.5	1.4 (per slice)
Hovis Thick White bread	3.5	1.7 (per slice)
Wholemeal Pitta Bread (Tesco own)	2.5	1.6 (per slice)
Tesco butter Brioche rolls	14.0	4.9 (per roll)
White Bagel (Tesco own)	5.4	4.6
CEREALS	Sugar (g) per 100g	Sugar (g) per (typical) 40 serving
Kellogg's Fruit and Fibre *	24	9.6
Kellogg's All Bran	18	7.2
Kellogg's Special K	17	6.8
M&S Count On Us Muesli *	36.1	15g
READY MEALS	Sugar (g) per 100g	Sugar (g) per (typical) serving
Sainsbury's Sweet & Sour Chicken with Rice	11.8	50.7 (per 450g pack)
Tesco Healthy Living Duck & Hoisin Noodles	7.3	23.4 (per 350g pack)
Weight Watchers Heinz Signature Recipes Sweet Chilli Chicken	7	22.5 (per 320g pack)
Asda Reduced Calorie Sweet Chilli Chicken Noodles	5.6	19.6 (per 350g pack)
Weight Watchers Sweet and Sour Chicken	5	18.9 (per 320g pack)
Tesco Healthy Living Sweet Chilli Chicken Noodle	5.2	16.2 (per 350g pack)
PRE-PACKAGED SANDWICHES	Sugar (g) per 100g	Sugar (g) per (typical) serving
Chicken Salad	2.2	5.1
Tuna and sweetcorn	2.9	4.9
BLT	2.5	4.6
Sweet Chilli Wrap	9.2	16.1
Southern fried Chicken Pasta Salad	2.9	8.8
Tesco Fish Sushi (large)	10.4	22.6
SAUCES	Sugar (g) per 100g	Sugar (g) per (typical) serving
Heinz Tomato Ketchup	23.6	2.6 (10g)
Heinz Salad Cream	17.5	1.7 (10g)
Hellmann's Mayonnaise	1.3	<0.5
SAVOURY SNACKS	Sugar (g) per 100g	Sugar (g) per (typical) serving
Walkers Salt and Vinegar Crisps	1.0	0.3
Walkers Salt and Vinegar baked crisps	6.3	1.6
Sweet Popcorn	31.3	6.3 (20g serving)

* Some of the sugars occur naturally in the fruit

Appendix 1 continued...

SWEET SNACKS	Sugar (g) per 100g	Sugar (g) per (typical) serving
Cadbury's Dairy Milk	56	25 (per 45g)
McVities Chocolate Digestives	29.5	4.9 (per biscuit)
Eat Natural Bar	47.7	23.8 (per 50g)
Tracker Cereal Bar	30.8	11.4 (37g bar)
Original glazed Krispy Kreme Donut	20	10 (49g doughnut)
BREAKFAST ON THE GO	Sugar (g) per 100g	Sugar (g) per (typical) serving
Muller Light (Peach and Pineapple)	7.1	12.4 (per 175g)
Belvita Biscuits	22	11 (per 50g)
Nutrigrain Bar	33.4	12 (per 37g)
Weetabix on the go (drink) – chocolate	8.8	22 (per 250ml)
DRINKS	Sugar (g) per 100g	Sugar (g) per (typical) serving
Innocent Smoothie Pomegranate Blueberry and Acai Drink	13.9	35g
Can of Coca-Cola	11	36.3
Carton of Apple Juice	11.1	22.2 (200ml)
Mars flavoured milk	12.8	25.7 (200ml)

Appendix 2

Sugar Swaps - with a bit of thought and planning it is easier than you may think to make sensible sugar swaps.

Original	Better	Even Better	Best
Cola	Reduced sugar cola	Zero sugar cola	Water
Large serving of fruit juice	Small serving (150ml) of fruit juice	Small serving (150ml) of fruit juice mixed with water	Water and a piece of fruit
Piece of cake	Serving of malt loaf	Wholegrain toast with a small amount of jam	Piece of fruit
Honey nut cereal flakes	Cereal flakes	Porridge with a small amount of honey	Porridge with fresh fruit
Chocolate muffin	Reduced sugar muffin	Fruit teacake	Wholemeal toast with banana
Large chocolate bar	Small chocolate bar	Low sugar cereal bar	Plain yoghurt with fruit
Sugary sweets	Reduced sugar sweets	Dried fruit	Fresh fruit

Further tips and advice to reduce the amount of sugar in the diet including recipe ideas etc. can be found at:

<http://www.nhs.uk/change4life/Pages/sugar-swap-ideas.aspx>



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