What are the most effective initiatives for preventing Type 2 diabetes?

Introduction

1. Food Standards Scotland (FSS) has a unique statutory duty under the Food (Scotland) Act 2015 to “improve the extent to which members of the public have diets which are conducive to good health”. The purpose of public health nutrition advice from Food Standards Scotland is to promote health and prevent illness so that the population may live longer, healthier lives, as per the Scottish Government’s National Outcomes. Our advice is centred on the prevention of a range of chronic, long-term conditions, including but not specifically targeted at the prevention of type 2 diabetes. FSS does not provide clinical nutrition advice for the treatment of medical conditions.

A Healthy Balanced Diet

2. Overall dietary composition, both in terms of nutrients and calories, can have profound positive and negative, long and short-term, effects on our health. For example, eating too little leads to malnutrition and related life-threatening conditions, while eating too much leads to overweight and obesity and to a different array of life threatening chronic conditions. Type 2 diabetes is one such condition.

3. Consumption of a healthy balanced diet and maintenance of healthy weight are key modifiable lifestyle factors in achieving good health throughout life. A healthy balanced diet is comprised mostly of fruit, vegetables and fibre rich starchy carbohydrates, together with smaller amounts of meat (or substitutes such as beans or lentils) and lower fat dairy products. Eating a healthy balanced diet also means that nutrient poor, high fat, sugars and salt foods, should only be consumed infrequently and in small amounts. The main consumer facing tool for communicating and promoting a healthy balanced diet is the Eatwell Guide.

The Scottish Diet

4. The Scottish Dietary Goals (SDG), which reflect the current scientific consensus on diet and health, were most recently updated in March 2016 and published on the Scottish Government website. These goals are used to guide dietary policy development and to provide a benchmark against which we monitor the Scottish diet.

5. The Scottish diet falls far short of the SDG. In December 2015, Food Standards Scotland published a Situation Report on the Scottish diet which draws together evidence from the

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1 Starchy carbohydrates are a macronutrient and a major component of our diet. They are found in many types of foods. Foods which are high in carbohydrate are often referred to as ‘starchy foods’. These include rice, bread, potatoes and pasta and are recommended to make up around 1/3 of a healthy balanced diet, as per the Eatwell Guide.
FSS dietary surveillance programme, together with other sources, to provide an update on the diet in Scotland. Our poor diet is deep-rooted and has not changed significantly in almost 20 years. In short, it is too high in calories, fats, sugar and salt as well as too low in fruit and vegetables, fibre and oil-rich fish. Discretionary foods and drinks, high in calories but poor in nutrients, contribute around 50% of all the sugar we consume and around 20% of all calories and fats. Poor diet exists across all socio-economic groups, but the most deprived tend to have the poorest diets.

**FSS action in public health nutrition**

6. To improve public health, by reducing levels of obesity and diet-related ill health, it is important to encourage, support and make it easier for the public to eat more healthily. Based on a wide range of evidence, including peer reviewed papers, recommendations of scientific advisory committees, reviews from McKinsey Global Institute (2014) and Public Health England (2015) and submissions to the UK Health Select Committee, the FSS Board discussed a paper setting out potential measures for improving the Scottish diet in Jan 2016.

7. Recognising that no single action would improve poor diet and obesity, this paper recommended a package of measures and was agreed by the FSS Board as FSS recommendations to the Scottish Ministers. The measures fall into two broad categories: measures to improve consumer understanding of diet and health and measures to improve the food and drink environment.

8. The abundance of heavily promoted, cheap, high, fat, sugars, salt food and drink can readily undermine people's ability to act in their own self-interest. We must also accept that although knowledge and attitudes around healthy eating or unhealthy foods may be judged to be good, they do not always translate into healthier eating practices. For example, although 65% of people report being concerned about other people having an unhealthy diet, many of the same people still regularly consume a large amount of discretionary foods such as cakes, biscuits, confectionery and crisps. While consumer information and education are important components of our package of measures, it is our view that product reformulation, curbs on advertising and promotions and taxation are also necessary.

**Obesity and diabetes in Scotland**

9. In simple terms, a person will gain weight when the energy they consume (i.e. calories taken in through food and drink) exceeds the energy they use (i.e. calories burned through maintaining body functions, normal daily activity and additional physical activity). Eating too much leads to overweight and obesity; in turn, this can lead to chronic conditions such as type 2 diabetes. Energy imbalance can arise for a number of reasons, including sedentary lifestyles as well as overconsumption in response to an environment where high fat, sugars and salt foods and drinks are cheap, readily available and heavily promoted.

10. It is estimated that by 2030 as many as 40% of us may be obese and, given that obesity may already be costing the public purse as much as £4.6 billion per year, we cannot continue on this trajectory. The NHS is already spending around 9% of its total health expenditure in treating type 2 diabetes alone. This is no longer a health issue alone but is increasingly becoming an economic one: any country with these levels of overweight and obesity will be adversely impacted in terms of economic productivity.
11. The Scottish Government looks at a number of ‘Obesity Indicators’ in monitoring progress for the Prevention of Obesity Route Map. The latest update shows that in 2016, 65% of adults aged 16 and over were overweight, including 29% who were obese. Levels of overweight and obesity have stayed roughly the same since 2008. However, the public health consequences of increasing obesity incidence before 2008 has yet to manifest, as chronic diseases such as type 2 diabetes may take many years to develop.

12. At the end of 2016, local diabetes registers recorded 257,728 people diagnosed with type 2 diabetes in Scotland; 88.3% of all cases of diabetes. Where Body Mass Index was also recorded, 32% of patients with type 2 diabetes were overweight and a further 57% were obese. People with type 2 diabetes are also at greater risk of other chronic conditions, including damage to the heart and blood vessels known as cardiovascular disease (CVD). Risk of developing CVD is also moderated by diet, including by salt and saturated fat intakes.

Role of healthy diet in the prevention of ill health

13. In 2015, the Scientific Advisory Committee on Nutrition (SACN) published its recommendations on carbohydrates, including sugars, and fibre. As an expert group providing population-level advice, SACN carried out an extensive and rigorous risk assessment of specific dietary carbohydrates and chronic diseases, including type 2 diabetes.

14. Findings relevant to type 2 diabetes

SACN found evidence that:

- Greater consumption of sugars-sweetened beverages is associated with increased risk of type 2 diabetes
- Diets with a higher glycaemic index or glycaemic load are associated with a greater risk of type 2 diabetes, as is a high consumption of white rice and potatoes.
- Higher consumption of dietary fibre is associated with a lower risk of type 2 diabetes, as is a higher consumption of brown rice
- Energy restricted, higher carbohydrate, lower fat diets may be effective in reducing body mass index and body weight.

SACN found no evidence to support:

- The view that diets higher in total carbohydrate cause weight gain
- An association between risk of type two diabetes and intake of sugars, total starch or refined grains

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5 Body Mass Index (BMI) is calculated from a person’s weight and height. An overweight BMI is from 25 to 30 and an obese BMI is 30+.

3 Glycaemic index (GI) is a measure of the blood glucose (sugar) response brought on by a specific ingredient, food or meal, as compared with the response induced by the same amount of available carbohydrate from a reference source, such as pure glucose. Glycaemic Load (GL) takes into account of both GI and carbohydrate content of a food.

4 The evidence is mainly from Asian populations whose rice intakes are far above those in the UK.

5 Some evidence found for potatoes; may be confounded by the way potatoes are cooked e.g. frying.

6 There was also decreased risk for insoluble, soluble and cereal fibre; higher fibre breakfast cereals; wholegrain bread; whole grains.

7 Starch is a polysaccharide comprised of glucose units.
15. The recommendations which SACN made on the basis of their review pertain to the whole population, rather than any specific group or disease condition.

SACN recommended that:

- The population average intake of free sugars should not exceed 5% of total dietary energy for age groups from 2 years upwards\(^8\)
- The consumption of sugars-sweetened beverages should be minimised, in both children and adults
- The average population intake of dietary fibre\(^9\) for adults should be 30g/day

**Conclusion**

16. Food Standards Scotland’s role is in providing public health nutrition advice. There is an extensive body of evidence supporting consumption of a healthy balanced diet as a preventative factor in lowering risk of overweight and obesity, a key factor in development of Type 2 diabetes and other chronic conditions. Diet factors such as consuming too many sugars-sweetened beverages and not enough fibre are also linked to risk of type 2 diabetes. It is clear that preventative approaches are the best means of averting the increase in the population with type 2 diabetes. Education alone will not solve this, in fact not one single solution will, but there should be no doubt that our current consumption habits need to change.

17. Unfortunately, the majority of the population in Scotland do not consume a healthy balanced diet. Given that improving diet would prevent a number of chronic conditions, including type 2 diabetes, it is incumbent on Food Standards Scotland, the Scottish Government, NHS and the other public organisations, as well as the food and drink industry to support the Scottish population to consume a healthy balanced diet. The Food Standards Scotland Board Paper from January 2016\(^{xii}\) and the Scottish Government’s ‘Healthier Future’ consultation set out plans to take this forward.\(^{xii}\)

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\(^8\) Defined as monosaccharides (single sugars like glucose and fructose) and disaccharides (double sugars like sucrose and maltose) added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrups and unsweetened fruit juices. Under this definition lactose when naturally present in milk and milk products is excluded.

\(^9\) Defined as all carbohydrates that are neither digested nor absorbed in the small intestine and have a degree of polymerisation of three or more units, plus lignin.
References