

Diet and diabetes – the new recommendations

Pam Dyson

Introduction

In an effort to address which diet is best for people with diabetes, many countries have published nutritional recommendations (European Association for the Study of Diabetes, 2000; American Diabetic Association, 2002). The most recent recommendations were published by the Nutrition Subcommittee of the Diabetes Care Advisory committee of Diabetes UK (2003). This article outlines the UK nutritional recommendations and provides concise advice about the new information that they contain.

The statement that introduced the first lecture I received as a dietetic student in 1973 and that I have heard repeated at various intervals over the past 30 years, usually to support the current thinking about the most effective dietary approach for treatment of diabetes, is:

'Diet is a cornerstone in the treatment of diabetes.'

Diet remains a contentious issue for a number of reasons, most importantly because the majority of dietary advice we give our patients is not underpinned by hard evidence. It has been shown that nutritional therapy is an integral part of effective management of diabetes and has a vital role in helping people with diabetes achieve and maintain optimal glycaemic control (UKPDS, 1990; Delahanty, 1998), but there is little evidence to support the 'best' diet.

UK nutritional recommendations

The recommendations for people with diabetes are similar to the recommendations made for the general population, commonly known as a healthy diet (see Table 1, Table 2, Table 3). This entails adopting a reduced sugar, reduced fat and reduced salt diet that is high in fibre and with plenty of fruit and vegetables. There have been some changes in emphasis since the last published recommendations in 1992 (BDA, 1992) and these are summarised below (McGough, 2003).

A greater emphasis on the benefits of regular physical activity and weight management

Regular daily physical activity (as opposed to sessions of formal exercise) is of benefit to people with diabetes, regardless of body weight. Physical activity aids weight control, improves insulin sensitivity and lipid levels and maintains muscle mass (Lean and Haa, 1998).

The so-called 'obesity epidemic' has contributed to rising levels of diabetes around the world (Costacou and Mayer-Davis, 2003) and has led to emphasis upon weight management, especially amongst the 80% of those with type 2 diabetes who are obese. It has been shown that relatively small reductions of bodyweight have large metabolic benefits in people with diabetes; intentional weight loss of 9–13 kg results in a 25% reduction in the relative risk of mortality (Aucott et al, 2004).

Weight management is recommended through a combination of diet and increased physical activity. A reduction in energy dense foods is advised, especially those containing large amounts of fat and sugar. There is, as yet, no scientific evidence to support the use of low carbohydrate diets (e.g. the Atkins diet) in diabetes.

More flexibility in the proportion of monounsaturated fat and carbohydrate in dietary intake

Previous recommendations have advised that the diet should provide 50–55% energy

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1 New nutritional guidelines for people with diabetes have recently been published by Diabetes UK (2003).

2 The new guidelines emphasise the benefits of regular physical activity and weight management more than previously published guidelines.

3 Sucrose is no longer restricted to a specific amount and foods that have a low glycaemic index are recommended.

4 A summary of the practical recommendations for people with diabetes is given.

5 Empowerment means a more positive experience for the patient and healthcare professional and is more likely to result in meaningful behaviour change.

KEY WORDS

- Nutritional guidelines
- Glycaemic index
- Dietary advice
- Empowerment
- Goals

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Table 1. Summary of nutritional recommendations for people with diabetes

Nutrient	Recommendations for diabetes
Protein	Not > 1 g per kg bodyweight
Total fat (% total energy intake)	< 35%
Saturated and transunsaturated fat	< 10%
n-6 polyunsaturated fat*	< 10%
n-3 polyunsaturated fat**	Eat oily fish once or twice a week
cis-monounsaturated fat***	10–25%
Total carbohydrate (% total energy intake)	45–60% } 60–70% of total energy intake
Sucrose	Up to 10%
Dietary fibre	No quantitative recommendation
Vitamins and antioxidants	Encourage foods naturally rich in vitamins and antioxidants
Salt (g/day)	< 6

*n-6 polyunsaturated, the most common kind of polyunsaturated fat, is found in sunflower and corn oil.

**n-3 polyunsaturated fat, less common, is found in oily fish (salmon, mackerel, sardines).

***cis-monounsaturated fat is found in olive oil and rapeseed oil

provides only 45% of energy as carbohydrate. As carbohydrates cause postprandial increases in blood glucose, it is now recommended that there should be more flexibility in the amount of monounsaturated fat and carbohydrate in the diet. It is important that fat intake is modified to reduce the risk of vascular disease and that saturated (animal) fat is reduced to less than 10% of energy intake. Monounsaturated (olive oil, rapeseed oil) should be substituted for saturated fat and together with carbohydrate foods should make up the bulk of the diet (60–70% of energy). Fat is an energy dense nutrient and a reduction in intake is recommended for those individuals who would benefit from weight loss.

Sucrose (table sugar) no longer restricted to a specific amount

There is widespread belief that simple sugars like sucrose are digested and absorbed quickly and should be avoided and that complex carbohydrates like bread and potatoes are digested more slowly and should form the basis of the diet. It has now been well-established that sugar does not increase blood glucose levels more than

as carbohydrate. In practice it is difficult for people with diabetes to increase carbohydrate intake to this level (Toeller et al, 1996) and the traditional UK diet

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Table 2. Food choices for people with diabetes

Food choice	Comment
Nutritive sweeteners	
fructose	● No proven advantage over fructose, but no reason to avoid naturally occurring fructose in fruit
sugar alcohols, e.g. sorbitol	● Lower cariogenic effect, but no other advantage over sucrose and may cause osmotic diarrhoea
Non-nutritive (intense) sweeteners	
	● Useful in beverages
	● Potentially useful in the overweight
	● Safe if recommended intake not exceeded
'Diabetic' foods	Unnecessary, expensive, may cause diarrhoea
Plant stanol and sterols , e.g. Benecol, Flora Proactive	2 g per day can reduce LDL-cholesterol by 10–15%
Fat replacers and substitutes e.g. Olestra	● May facilitate weight loss ● Long-term studies needed
Herbal preparations	No convincing evidence of benefit

From: The implementation of nutritional advice for people with diabetes. A report from the Nutrition Sub-Committee of the Diabetes Care Advisory Committee of Diabetes UK (2003)

Table 3. Summary of practical recommendations for people with diabetes

Component	Practical recommendation
Energy balance	<ul style="list-style-type: none"> ● Individuals of normal weight do not need advice about restricting energy intake <p><i>Advice for overweight/obese individuals:</i></p> <ul style="list-style-type: none"> ● Modest weight reduction is beneficial ● Agree realistic targets (5–10% bodyweight) ● Recommend a combination of diet and exercise ● Advise reduction in energy dense foods, especially high fat foods
Physical activity	<ul style="list-style-type: none"> ● Moderate exercise (walking, housework, gardening) for 30 minutes most days of the week
Carbohydrate	<ul style="list-style-type: none"> ● Include foods containing carbohydrate ● Increase intake of low glycaemic index carbohydrate foods: fruit, vegetables, oats, pasta, beans and lentils ● Include foods high in soluble fibre: fruit, vegetables, oats, beans and lentils. Try to eat 5 portions of fruit and vegetables daily ● Moderate amounts of sucrose-containing foods may be included at meals. If overweight, reduce or avoid sugar and sugary foods
Fat	<ul style="list-style-type: none"> ● Reduce intake of fat, especially saturated fat (animal and dairy products) ● Moderate amounts of polyunsaturated fat may be included (sunflower and corn oil products) ● Substitute monounsaturated fat (olive and rapeseed oil products) for saturated fat ● Include 1–2 portions of oily fish a week
Protein	<ul style="list-style-type: none"> ● Moderate protein intake should be maintained
Salt	<ul style="list-style-type: none"> ● Reduce salt in cooking and at the table ● Reduce intake of processed and convenience foods
Alcohol	<ul style="list-style-type: none"> ● 2–3 units daily (if not contraindicated) with 2–3 days without alcohol weekly ● Drink alcohol with or after food – avoid drinking on an empty stomach ● Be aware of the risk of hypoglycaemia in those treated with insulin or sulphonyurea therapy

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1 Research supports the recommendation that sucrose can provide up to 10% total energy intake (Slama et al, 1984) without compromising glycaemic control.

2 Foods that contain large amounts of sugar are often high in fat and are therefore energy (calorie) dense.

3 People with diabetes who are overweight and who would benefit from weight loss should be advised to reduce sucrose-containing foods and drinks.

starchy foods containing the same amount of carbohydrate. The total amount of carbohydrate eaten will determine postprandial blood glucose levels regardless of whether it is sugar or starch.

Traditionally table sugar (sucrose) has been restricted for people with diabetes. However, research supports the recommendation that sucrose can provide up to 10% of total energy intake (Slama et al, 1984) without compromising glycaemic control. Including sugar-containing foods should not result in an increase in overall

energy intake, which will cause weight gain. Foods that contain large amount of sugar are often high in fat, e.g. chocolate, biscuits, cakes and are therefore energy (calorie) dense. People with diabetes who are overweight and who would benefit from weight loss should be advised to reduce sucrose-containing foods and drinks.

A recommendation to choose foods that have a low glycaemic index

The term glycaemic index (GI) was first coined in 1981 by Jenkins and is used to

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1 Most people who are diagnosed with diabetes will never achieve the ideal diet and patterns of physical activity.

2 In practice, many people who are diagnosed with diabetes will receive dietary advice from the primary healthcare team and from specialist nurses.

3 It is of paramount importance that all members of the diabetes team delivering dietary advice deliver a consistent message to people with diabetes.

4 Most dietary interventions still concentrate upon what should be done (reduce fat, increase fruit and vegetables, etc) rather than how dietary change may be achieved (counselling skills, empower patients, motivational interviews).

Table 4. Glycaemic Index (GI) of some common carbohydrate foods

Type of food	Low GI	Moderate GI	High GI
Bread		Granary Rye	White Wholemeal Brown
Rice		Basmati Brown	White
Potatoes		New	Old – mashed, boiled, baked, roast
Pasta, noodles	All types – spaghetti, macaroni, penne, tagliatelle		
Breakfast cereals	Oat-based cereals, All Bran, Special K, Sultana Bran		Corn or wheat-based breakfast cereals
Fruit	Fruits grown in temperate climates: apples, pears, plums	Tropical fruits: bananas, mangoes, pineapples	Fruit juice
Milk	Milk and plain yogurt	Milkshakes and flavoured yogurt	

give an indication of the effect of carbohydrate foods on blood glucose levels. Foods with a low GI are digested and absorbed more slowly than foods with a high GI. Low GI foodstuffs are recommended for people with diabetes. Short-term studies have shown beneficial effects on both glycaemia and lipid profiles in people with diabetes (Frost et al, 1994). Table 4 shows the GI of some common foods.

Practical applications

Table 1 shows that the theoretical nutritional recommendations are made in terms of nutrients and not foods, and the skill of the dietary practitioner lies in translating this theory into practice. The practical applications are shown in Table 3. Although these recommendations are based upon the available evidence, it is important to remember that they are not rigid targets that should be imposed on every individual with diabetes regardless of personal circumstances. Most people diagnosed with diabetes will never achieve the ideal diet and patterns of physical activity. They should be encouraged to make specific changes to their diet and activity that move towards the ideal

recommendations. These changes must be negotiated for each individual and take into account factors like meal patterns, personal food preferences, culture, medication and lifestyle.

Delivering dietary advice

Ideally, dietary information should be delivered by a diabetes specialist dietitian (BDA, 1999). However, there are too few specialist dietitians to provide individual advice for all (Nelson et al, 2000) and the predicted increase in type 2 diabetes will exacerbate this. In practice, many people who are diagnosed with diabetes will receive dietary advice from the primary healthcare team and from specialist nurses. It is of paramount importance that all members of the diabetes team delivering dietary advice are updated on recent changes and that they deliver a consistent message to people with diabetes.

The focus of dietary counselling deserves consideration. The majority of dietary interventions still concentrate upon what should be done (reduce fat, increase fruit and vegetables, etc) rather than how dietary change may be achieved (counselling skills, empower patients, motivational interviews). Most people

make decisions about their food intake for reasons other than health or because they have diabetes and these reasons must be addressed for successful counselling. Dietary advice must consider the individual's wishes and willingness to change and should address personal, cultural and religious preferences and take into account the individual's beliefs and lifestyle. This is often referred to as the empowerment model and there is mounting evidence to support this approach to chronic disease management (Anderson, 2000).

Patient empowerment

Healthcare professionals are trained in the traditional concept of the acute medical model, and feel it is their responsibility to help their patients achieve tight glycaemic control to minimise the risks of complications. However, they have no control over the lifestyle behaviours that their patients choose to adopt and this leads to frustration, dissatisfaction and patient-blaming.

Application of the empowerment model aims to maximise the skills, knowledge and sense of personal autonomy to allow people to take charge of their own diabetes self-management. It is a collaborative process leading to informed decisions by the person with diabetes and does not rely on the traditional view of the healthcare professional as the expert. Empowerment means a more positive experience for the patient and healthcare professional alike and is more likely to result in meaningful behaviour change.

Conclusion

The recently published nutritional recommendations from Diabetes UK (2003) stress the importance of individual implementation of evidence-based dietary advice for people with diabetes. These recommendations are not based on a one-size fits all approach and should be interpreted in light of the wishes and needs of the person with diabetes. The focus of counselling the person with diabetes should include both the two domains of knowledge (what is said) and awareness of the patients needs (how it is said). Most people with diabetes choose similar health-

related goals to healthcare professionals – improved glucose, lipid and blood pressure levels, weight loss and increased physical activity levels and as they become empowered are more likely to achieve these goals. ■

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