

Module III-5

Nutrition therapy

Overview

Effective nutritional therapy in diabetes has major benefits for both short- and long-term diabetes outcomes. However, changes in eating habits can be difficult to achieve. The aim of this module is to provide a theoretical framework that is directly linked to effective practical nutritional management in order to positively influence diabetes outcomes. A key component of delivery by diabetes educators is sensitivity to and awareness of social, cultural, religious and psychological status and backgrounds.

Nutritional education needs to include an individual nutritional assessment to achieve optimum glycaemic control and reduce cardiovascular risk. Guidance should be provided on recommended daily intakes of protein, carbohydrate, fat (saturated fat, poly and monounsaturated fat, n-3 and n6 fatty acids), fibre and antioxidants.

Nutritional changes are often difficult to achieve. Therefore, diabetes educators should be able to assess willingness and ability to make changes; to provide information and support to facilitate healthy nutritional choices by the person with diabetes.

Goals

- To provide the diabetes educator with basic strategies and skills to assist and motivate people with diabetes to meet their nutritional needs
- To provide participants with an understanding of nutrition therapy that involves:
 - Appropriate energy and nutrients for optimal growth, development and health
 - Strategies for achieving or maintaining a healthy weight
 - Strategies for achieving and maintaining optimal glycaemic control by balancing food intake with insulin, metabolic requirements and physical activity
 - Reducing the risk of microvascular complications through optimal glycaemic control
 - Prevention and treatment of acute complications of insulin therapy, such as hypoglycaemia, hyperglycaemia illness and exercise-related problems

- Reducing the risk of macrovascular complications by achieving targets through meeting nutritional recommendations
- Preserving social and psychological well-being
- Respect for social and cultural eating patterns

Objectives

After completing this module the participant will be able to:

Basic principles of a healthy diet

- Clearly describe a well balanced diet for people with diabetes – protein, fat (saturated, monounsaturated and polyunsaturated fatty acids), carbohydrate, sucrose, alcohol, vitamins and antioxidants, minerals and trace elements and sodium recommendations
- Discuss the reasons behind the nutrition recommendations (referring to evidence-based guidelines), and applying them to the local population
- Identify the familial, social and cultural influences on the eating styles of the local population – consider ethnic groups (health professionals providing nutritional advice should explore food in the context of the individual and their culture and society when assessing nutritional needs)
- Identify the social and psychological influences on food choices
- Identify the availability of healthy food choices
- List the indigenous staple foods
- List the carbohydrate content of common foods
- Identify the glycaemic index of foods and its importance in post-meal effects on blood glucose levels
- Identify the role of sugars, alternative sweeteners, and diabetic foods in healthy eating, and identify the safe daily intake of each sweetener
- Describe how to read food labels

Nutritional assessment

- Prepare a logical structure for the assessment
- List the problems that might be encountered when taking nutritional histories and assessing results

Use of clinical data in setting dietary goals

- Assess body mass index (BMI), waist-to-hip ratio and biochemical indices – for example, glycaemic control (HbA_{1c}), lipids (LDL, VLDL, HDL and total cholesterol, triglycerides), renal function (glomerular filtration rate, potassium, sodium, phosphate)
- Collaborate with the person to identify nutritional priorities considering food preferences, age, diet, medical, biochemical and anthropometric factors

Effective nutritional information

- Collaborate with the person to identify realistic nutrition-related goals, based on the current dietary habits of the person and the family, socio-economic issues, cultural and religious practices, daily routine and schedule, work/school/family demands and exercise habits
- Identify, consider and address common dietary beliefs and misconceptions about nutrition and diabetes (in the UK, for example, it is believed that people with diabetes ought not to eat bananas) – these differ between countries
- Consider the ethnicity, culture, age and lifestyle of the person with diabetes
- Consider the psychosocial issues affecting the person and their family and carers – refer to **Module I-4, Psychosocial and behavioural approaches**
- Consider physical activity and working patterns

Different educational methods

- Explain the importance of models, such as the food pyramid, plate model and hand jive, to teach healthy eating principles
- Explain the various methods of teaching carbohydrate assessment and monitoring carbohydrate counting levels 1, 2 and 3; carbohydrate estimation; portions; glycaemic index; qualitative diet; meal planning approach; signposting/signal system; free diet
- Identify local educational models used when providing nutritional education to people with diabetes
- Discuss the benefits and negative aspects of each type of system and their relationship to glycaemic control and suitability for individuals

Specific nutrition-related needs of children, adolescents and adults with type 1 diabetes

- Adults
 - Discuss quality-of-life issues and maintain psychosocial well-being
 - Describe how to prevent hypo- and hyperglycaemia
 - Describe how to tailor the insulin profile to the person's nutritional therapy
 - Appreciate and understand blood glucose monitoring in relation to the nutritional/meal plan and insulin profile
 - Discuss the effects of alcohol on blood glucose levels
 - Discuss physical activity, blood glucose levels and appropriate dietary intake
- Children (refer to **Module IV-1, Diabetes in children and adolescents**)

In addition to the nutritional aims above:

- Describe the constantly changing need for the adjustment of insulin and adequate energy in relation to growth and development
- Describe the reasons why nutritional goals are based on an individual's diabetes management goals
- Appreciate age-related issues or problems (including toddler food refusal, children's parties, peer pressure, insulin omission and specifically omission of insulin by teenagers, religious and cultural influences, constantly changing eating fads, fast foods) – these will differ between countries
- Appreciate the problems encountered by teenagers, such as peer pressure on eating patterns and lifestyle – these will differ between countries
- Appreciate the importance of behaviour and other psychosocial issues in children and adolescents, which may influence adherence to a management regimen – refer to **Module I-4, Psychosocial and behavioural approaches**

Specific nutrition-related needs of people with type 2 diabetes

- Adults
 - Achieve and maintain realistic weight loss through a weight-management programme – if desired and appropriate. If necessary, support it by liaison with other programmes, such as exercise programmes

- Identify the relationship between weight loss and total energy restrictions, insensitivity to insulin and insulin requirements
- Recognize that a 5-10% weight loss will improve glycaemic control, blood pressure, and serum lipid levels
- Prevent obesity
- Prevent hypo- and hyperglycaemia
- Manage dyslipidaemia
- Promote psychosocial well-being and self-esteem
- Identify the effects of meal spacing on blood glucose levels and weight in type 2 diabetes
- Identify the relationship between nutritional intake and micro- and macrovascular complications
- Manage hypertension by effective weight management and sodium restriction for appropriate people
- Encourage physical activity
- Appreciate the cultural meaning of obesity in different societies
- Children (refer to **Module IV-1, Diabetes in children and adolescents**)
 - Identify the increasing incidence of type 2 diabetes in children and adolescents
 - Identify ethnic minority groups that have a high prevalence of type 2 diabetes in childhood
 - Describe the importance of healthy eating for weight loss in children and adolescents
 - Design a suitable weight-reduction programme for a child – including adequate nutrients, a behavioural programme for the family, parental role modelling and lifestyle change*
 - Identify other agencies to facilitate healthy food options and increased physical activities, such as schools, after-school clubs
 - Identify the various genetic types of diabetes, such as MODY, and give appropriate healthy eating advice if the child is not overweight

Specific nutrition-related needs pre-conception, in gestational diabetes, and during and after pregnancy
(refer to **Module IV-2, Gestational diabetes**)

- List the important nutrients in meal planning for advice pre-conception, in gestational diabetes, and during and after pregnancy
- Discuss the importance of achieving glycaemic targets prior to and during pregnancy
- Identify the outcomes for the child and mother if glycaemic control is poor
- Give nutritional advice post-pregnancy as needed, for instance regarding breastfeeding and a healthy weight
- Stress the importance of avoiding hypoglycaemia when breastfeeding
- Provide nutritional counselling for gestational diabetes considering the above objectives and national guidelines
- Help people determine how to redistribute carbohydrates in response to glycaemic load
- Discuss the differences between the management of pregnant women with type 1 diabetes and those with type 2 diabetes

Specific nutrition-related needs of older adults, including those living in care facilities (refer to **Module IV-4, The older adult**)

- Recognize that older adults may have specific nutritional problems
- Discuss glycaemic targets for older people and if and when they should be adjusted according to the health of the individual
- Recognize that people in institutions and care homes do not have direct control over their eating patterns and the availability of food
- Discuss other factors, such as poor dentition, weight loss, lack of appetite, poor eyesight or dementia, that can affect diabetes management
- Recognize that poor glycaemic control will result in high complication rates in older adults, and surveillance of complications may be poor compared to that of younger people
- Discuss the possible need for increased social care and practical help, as well as the importance of liaison with other agencies

Specific nutrition-related needs of people from ethnic groups

- Discuss the eating patterns of people from all cultures within the given population
- Discuss the influence of culture and religion on eating patterns and beliefs about various foods
- Identify local foods and medicines that may be taken as alternative forms of medication and be able to give evidence-based advice about the effectiveness, safety and contraindications
- Produce information and leaflets that are culturally sensitive and suitable for the population – for example, photographs of foods are more appropriate where literacy is an issue
- Identify and address whether other nutritional problems exist in the given population

Nutritional information during religious and cultural festivals

- Identify the religious and cultural festivals in the region and identify the implications for diabetes – for example, fasting and feasting
- Give guidance on adjusting the timing of meals and drinks and medication

The nutritional needs of dyslipidaemia in diabetes*

- Explain the links with type 1 diabetes and type 2 diabetes
- Describe the importance to cardiovascular risk of total fat, saturated fat, monounsaturated fat, polyunsaturated fat, and trans fatty acids
- Describe the importance to cardiovascular risk of fish oils
- Identify foods that are rich in omega 3 fatty acid – including vegetarian sources
- Describe the relationships between fats and obesity
- Describe the role of cholesterol-lowering spreads and functional foods

Eating disorders*

- Identify the high incidence and prevalence of abnormal eating habits and eating disorders (anorexia nervosa, bulimia nervosa, binge eating) in young people with diabetes
- Appreciate the antecedents to dysfunctional eating, eating disorders and their prevalence within the given country and population

- Recognize the potential for insulin omission and weight control
- Recognize and address stress eating
- Give guidance on therapeutic strategies when eating disorders are diagnosed
- Identify diagnostic tools, such as questionnaires, that are suitable for identifying eating disorders
- Recognize when it is necessary to refer to a specialized mental health unit

Coeliac disease*

- Describe the increased risk of coeliac disease associated with type 1 diabetes
- Discuss the pros and cons of screening for coeliac disease
- Identify whether any information is available for people with diabetes and coeliac disease
- Contact organizations that support people with coeliac disease
- Prepare a list of gluten-free products that are readily available in the country
- Understand the implications of the requirements of other nutrients – calcium to tackle or prevent osteoporosis, extra iron at diagnosis, high antioxidants due to increased cancer risk
- Appreciate the practical difficulties of the food constraints involved in diabetes and coeliac disease, and provide practical food alternatives
- Prepare selected foods that are gluten-free and taste them

Suitable resources and information for the needs of local people with diabetes

- Recognize suitable resources for all ages for type 1 diabetes and type 2 diabetes
- Identify and use current local/national/international evidence-based guidelines
- Identify and use local/national/international support organizations and networks

Teaching strategies

Lectures, demonstrations, practising reading food labels, supermarket/shop tours, measuring BMI and waist circumference, identifying local resources, tasting sessions

Problem-solving through case studies, discussion groups, workshops (with adults, children and adolescents with diabetes)

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| Suggested time | 10 hours |
| Who should teach this module | Dietitian who specializes in both paediatric and adult diabetes |
| Evaluation | <ul style="list-style-type: none"> • Demonstrate how to take the dietary history of a person with diabetes • Collaborate to develop self-directed behavioural goals related to nutrition • Assess the emotional concerns and the cultural, familial, religious and ethnic influences related to nutritional status and habits • Produce suitable resources and information based on evidence-based guidelines for the needs of people with diabetes in the local area (collaborating with other local health professionals) • Identify the different cultures within the population and produce suitable literature and teaching aids (these may include translated leaflets, videos, food models, audio tapes) • Be aware of the networks that exist, and communicate with other health professionals that are involved with nutritional management of diabetes • Identify local, national and international support organizations and enable the person with diabetes to contact them; be able to advise on the credibility of recommended organizations |
| References | <p>American Diabetes Association. Nutrition recommendations and interventions for diabetes 2008: A statement of the American Diabetes Association. <i>Diabetes Care</i> 2008; 31(Suppl 1): S61-S78.</p> <p>Allgrove J, Swift PG, Greene S (Eds). Evidence-based paediatric and adolescent diabetes. Blackwell BMJ Books. Oxford, 2007.</p> <p>Aslander-van Vliet E, Smart C, Waldron S. Nutritional management in childhood and adolescents diabetes. <i>Pediatr Diabetes</i> 2007; 8: 323-39.</p> <p>Australian Paediatric Endocrine Group. The Australian Clinical Practice Guidelines on the Management of Type 1 Diabetes in Children and Adolescents. APEG. Westmead, 2005. (www.chw.edu.au/prof/services/endocrinology/apeg)</p> <p>Canadian Diabetes Association Clinical Practice Guideline Expert Committee. Nutrition Therapy, Type 1 Diabetes in Children and Adolescents. In <i>Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada</i>. CDA. Toronto, 2003. (http://www.diabetes.ca/cpg2003/chapters.aspx)</p> <p>Delahanty LM, Halford BN. The role of diet behaviours in achieving improved glycaemic control in intensively treated patients in the Diabetes Control and Complications Trial. <i>Diabetes Care</i> 1993; 16: 1453-8.</p> <p>Delahanty LM. Clinical significance of medical nutrition therapy in achieving diabetes outcomes and the importance of process. <i>J Am Diet Assoc</i> 1998; 98: 28-30.</p> |

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* Indicates objectives at an advanced level

Detailed content for this module is available as a slide presentation at www.idf.org