

# **The German Diabetes Association**

## **Clinical Guideline: Psychosocial Factors and Diabetes Mellitus**

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### **Foreword**

In diabetes care the patient assumes a decisive role since he must carry out the essential therapeutic measures in his daily life, in a responsible manner and on a permanent basis. As a consequence, the prognosis for diabetes largely depends on how successful the patient is in this endeavour, against the background of his or her social, cultural, family, and work environment. Accordingly, the diabetic patient must:

- acquire knowledge about self-treatment and skills for its implementation in daily life,
- accept the diabetes mellitus on an emotional and cognitive level, and cope with the demands and pressure created by the illness,
- modify habits in lifestyle that stand in the way of successful self-treatment,
- successfully master crises, problems, or other illnesses which impede them in dealing with the diabetes (e.g. psychosocial stress, mental disorders such as depression, anxieties, eating disorders, dependency syndromes).

### **1. Patient education**

Structured patient education programmes are an indispensable therapeutic measure for patients with diabetes. By acquiring knowledge about the disease and skills for its treatment, the patient is put in a position to integrate the illness into his or her daily life in the best possible manner, to avoid acute or long-term negative consequences of the diabetes, and maintain a high quality of life. The patient achieves this through independent decision making. Accordingly, we make the following recommendations for clinicians:

- Every patient has the right to undergo a diabetes education programme, which should be offered immediately following the manifestation of diabetes.
- The patient education programme represents an integral part of treatment and therefore must proceed in close coordination with the diabetes drug treatment.
- During the education programme, the patient should be actively involved in the educational process. Besides imparting knowledge about diabetes and skills for its treatment, personal treatment goals should be established with the patient and concrete assistance offered to modify behaviour and transfer the content of the programme into the patient's daily life (self-management/ empowerment).
- The programme must take into account the patient's education level, the type of diabetes, form of therapy, special problem situations, and the prognosis of the illness. In accordance with the patient's background knowledge, information, and needs, programmes should be offered which are introductory, intermediate, refresher, or problem-specific courses.
- Recommended content for a structured education programme is given in Table 1.
- A patient education and treatment programme for patients with type 1 diabetes should comprise at least 20 sessions (of 45 minutes each).
- Middle-aged patients (< 65 years of age) with type 2 diabetes who exhibit a high risk of developing secondary illnesses and/or have arterial hypertension should undergo a patient education programme encompassing a minimum of 20 sessions (of 45 minutes each).
- For elderly patients (> 65 years of age) with type 2 diabetes who exhibit low risk of developing secondary illnesses, the education programme should encompass at least eight sessions (of 45 minutes each). The content of the education programme should be adapted to the patient's age and the prognosis of the diabetes.

**Table 1:** Recommended content for a structured education programme for patients with type 1 or type 2 diabetes.

- Assist in accepting the illness, engender adequate motivation for treatment, offer support for dealing with the diabetes in a responsible manner (empowerment)
- Establish and evaluate individual therapeutic goals
- Impart knowledge about the illness (causes, clinical characteristics, course of illness, and prognosis, etc.)
- Impart knowledge and skills for treating the illness (type 1 diabetes: principles of insulin therapy, adjusting the insulin dosage, etc., type 2 diabetes: behaviour modification, principles of drug treatment, insulin therapy, etc.)

- Learning self-monitoring techniques (measuring blood glucose levels, ketone levels, blood pressure, etc.)
- Learning to observe and evaluate oneself and to develop strategies for monitoring diabetes-relevant behaviour (nutrition, exercise, foot care, etc.)
- Recognising, treating, and preventing acute complications (hypoglycaemia, proneness to infections, etc.)
- Recognising, treating, and preventing risk factors (hyperlipidemia, hypertonia, smoking, etc.) for macroangiopathic secondary illnesses (heart attack, stroke, etc.)
- Recognising, treating, and preventing diabetes-related illnesses (nephropathy, retinopathy, neuropathy, erectile dysfunction, diabetic foot, etc.)
- Importance of nutrition within the framework of diabetes treatment. Impart knowledge and skills regarding healthy nutrition (carbohydrate content of foods, developing a nutrition plan that takes into account individual living habits and forms of therapy, etc.)
- Importance of physical exercise within the framework of diabetes treatment. Impart knowledge about the effects of physical activity on the regulation of blood glucose (hypo-, hyperglycaemia, etc.)
- Behaviour in special situations (ketoacidosis, travel, etc.)
- Assist in successfully dealing with difficulties of diabetes treatment in daily life
- Pregnancy, hereditary transmission, contraception (primarily type 1 diabetes)
- Social rights aspects of diabetes (job, driver's license, insurance, etc.)
- Standardized check-up examinations and use of the health care system to deal with diabetes in a conscientious manner

## **2. Behavioural medicine**

Behavioural medicine in diabetology aims to improve patients' cognitive, emotional and behavioural abilities so that they can cope with typical problems related to the illness and diabetes treatment.

### **Blood glucose awareness training**

- Approximately 20%-30% of all type 1 diabetes patients are affected by severe, recurrent hypoglycaemia. A large part of the patients have a disturbed perception of hypoglycaemia.
- Disturbed perception of hypoglycaemia can be treated effectively through structured blood glucose awareness training (BGAT). This training has been proven to improve perception of

low blood glucose levels, improve glycaemic control, reduce severe hypoglycaemia, and decrease hypoglycaemia-related driving violations.

- Patients with insufficient hypoglycaemia perception and severe recurrent hypoglycaemia should therefore be encouraged to undergo blood glucose awareness training.

### **Interventions for reducing stress**

- Increased levels of stress can lead to problems in carrying out treatment and poorer glycaemic control.
- The effectiveness of stress reduction strategies (e.g., progressive muscle relaxation, biofeedback) on improving metabolic control has not yet been conclusively verified, despite isolated indications of effectiveness.
- Therefore, interventions for reducing stress (e.g., relaxation) with the primary goal of improving blood sugar levels and metabolic control cannot yet be recommended for clinical routine.
- Yet, interventions for reducing stress (e.g., relaxation) are an effective procedure within the framework of basic psychosomatic care or psychotherapy. There are no counter-indications for their implementation in persons with diabetes mellitus.

### **Interventions to facilitate coping with diabetes**

- Coping with the illness emotionally and adequately is a decisive pre-condition for effective self-treatment behaviour and for the long-term success of therapy.
- Negative diabetes-related emotions and other problems in coping with the illness frequently arise over the course of the illness and can negatively influence glycaemic control and patients' compliance.
- A number of various individual and group therapy interventions are available to assist patients in coping with the illness. However, the majority of studies that have evaluated these types of interventions independent of educational programmes were unable to verify a significant effect on glycaemic control or quality of life.
- Therefore, the routine implementation of psychotherapy to support coping with diabetes can not be recommended.
- In some cases, psychotherapeutic interventions should be considered in patients who have severe problems with accepting the illness, as their effectiveness has been established for other chronic illnesses (e.g., KHK, asthma).

## **Interventions for improving interpersonal problems**

- Insufficient social support and interpersonal problems can impede the patient in performing therapy in daily life and can pose a barrier to good metabolic control. Positive social support can aid in improving glycaemic control.
- Psychotherapeutic group settings for improving interpersonal problems are effective in enhancing social competence; however, an overall positive effect on metabolic control has not been consistently demonstrated.
- Therefore, interventions for improving interpersonal problems are indicated in patients with severe interpersonal problems which have a negative effect on diabetes care.

## **3. Mental comorbidity**

### **3.1. Depression**

- Compared with the normal population, diabetes patients have a higher risk of developing depression. The predominate forms of depression are: *adjustment disorders*, symptoms that develop within the context of coping with the illness, and mild variants of depression (*dysthymia*).
- Diabetics with depression exhibit poorer metabolic control, comply with the therapeutic medical recommendations to a lesser extent, more frequently break off weight reduction programmes, and smoke more frequently than diabetics without depression. Moreover, they report a poorer health-related quality of life and incur considerably higher costs for medical care.

## **Diagnostics**

- The central diagnostic instrument is the doctor-patient dialogue. As part of screening for depressive disorders, the physician should enquire about depressive mood (despondency, hopelessness), loss of interest and pleasure in activities, and reduction in drive.
- If signs of depression are present, the physician should always actively bring up the danger of suicidal tendencies in the patient. Severe ketoacidosis or hypocaemia can be an expression of attempted suicide in conjunction with a depressive disorder or self-destructive behaviour, among others.
- Screening for depressive symptoms is also possible by means of standardized questionnaires (Hospital Anxiety and Depression Scale, HADS; General Health Questionnaire, GHQ; Allgemeine Depressions-Skala, ADS; Beck Depression Inventory, BDI).

## **Psychosomatic treatment in primary care administered by the GP or diabetologist**

Psychosomatic primary care takes on a crucial role in the treatment of depressed diabetics and is frequently sufficient in cases where the patient's symptoms are less pronounced. The following procedure is recommended:

- Build a trusting, reliable, constant relationship with the patient;
- Respond with active, flexible and supportive behaviour;
- Provide detailed information and education about depression, develop a common concept of the illness;
- Convey hope and encouragement, relieve feelings of blame, guilt and failure;
- Accept the patient's behaviour (including complaining);
- Positively reinforce non-depressive cognitions;
- Anticipate the patient's heightened vulnerability; avoid inappropriate criticism or exaggerated expectations for therapy (e.g., in the case overweight patients);
- Activate and motivate the patient, without overwhelming him or her;
- Actively address suicidal tendencies if suspicion exists, protecting the patient as needed by referral to specialists or inpatient facilities;
- If the symptoms are not alleviated within a certain period of time or if the pre-conditions for initial primary care are not met, then specialised psychotherapy and/or pharmacological therapy should be initiated.

## **Psychotherapy**

Inpatient or, if needed, outpatient psychotherapy is likely the most effective single measure for the treatment of depressive disorders. The following therapies are effective in treating depression:

- Interpersonal psychotherapy
- Behavioural therapy
- Psychodynamic psychotherapy

## **Pharmacological therapy**

The following drugs are recommended for the treatment of unipolar depressive disorders:

- SSRI (preferred over tricyclic antidepressants as they can lead to weight gain and hyperglycaemia)
- Atypical and new antidepressants

- In the presence of additional anxieties, adjuvant administration of benzodiazepine is possible (warning: potentially addictive; limited period of therapy) and/or low-potency neuroleptics.

### 3.2. Anxiety Disorders

- In comparison with the general population, there is no increased prevalence of anxiety disorders among diabetics.
- While the present anxiety disorders are not specific to this patient group, they are however closely tied to diabetes-related issues.
- Anxiety about secondary complications and fear of hypoglycaemia are the most frequent illness-specific psychological burdens connected with diabetes therapy.
- Pathological hypoglycaemia anxiety is characterised by excessive fear of potential hypoglycaemia in the future. To avoid the possibility of hypoglycaemia, the patient generally accepts high values of blood glucose. Depending on the clinical manifestation of hypoglycaemia anxiety, the criteria may be fulfilled for a *panic disorder*, *agoraphobia*, or *social phobia*.
- Excessive anxiety and worry about possible late effects and complications of diabetes can manifest themselves within the bounds of a *generalised anxiety disorder*.
- *Injection phobia* is a rare anxiety symptom occurring in patients who treat their diabetes with insulin.
- Anxiety about negative appraisal by others, or *social phobia*, can have negative effects on diabetes management (e.g., for fear of attracting negative attention, patients with diabetes refrain from measuring blood sugar or injecting insulin in public).
- Anxiety disorders or subclinical anxieties can be the cause of poor metabolic control. Diabetics who have an anxiety disorder are burdened above-average due to their diabetes and show a distinctly reduced health-related quality of life.

### Diagnostics

If suspicion of an anxiety disorder exists, thorough diagnostic procedures and differential diagnostics must be performed. In case of doubt or in cases with severe symptomatology, diagnostic clarification should be carried out by a physician specialising in psychotherapeutic medicine/psychiatry and psychotherapy or by a psychotherapist.

The physician's anamnestic interview is of considerable importance in the diagnostic procedure. The following questions should be clarified:

- Are anxiety attacks or chronic anxiety present?
- Do the anxiety attacks manifest themselves unexpectedly?

- Does the patient exhibit anticipation anxiety, avoidance behaviour, or social impairment?
- Is there excessive anxiety about the effects of diabetes or hypoglycaemia?

In addition, psychometric questionnaires can be used. The following instruments are appropriate:

- The Patient Health Questionnaire (PHQ-D)
- Hypoglycaemia Anxiety Inventory
- The Questionnaire on Stress in Patients with Diabetes (FBD-R)

### **Psychosomatic treatment in primary care administered by the GP or diabetologist**

In subclinical anxieties or low-grade symptomatology, basic treatment can be attempted within the framework of psychosomatic primary care. This includes:

- Counselling and educating about the disorder
- For low-grade phobias: encouragement and guidance in exposing patient to feared situations
- Self-help manuals

If improvement does not set in after approximately four weeks, then initiation of psychotherapy and/or pharmacological therapy is recommended.

### **Psychotherapy**

- Anxiety disorders generally can be effectively treated with psychotherapy.
- Psychotherapy is indicated in the presence of a medium-grade or severe anxiety disorder or if no satisfactory improvement was achieved within the bounds of the psychosomatic primary care.
- Appropriate therapeutic procedures include cognitive behavioural therapy and psychodynamic psychotherapy.
- If there is evidence of diabetes-specific anxieties (e.g., fear of hypoglycaemia, insulin injection phobia), then the method of first choice should be behavioural therapy with a psychotherapist experienced in treating patients with diabetes. Should this treatment not succeed, then psychodynamic therapy is recommended.

## Pharmacological therapy

The following drugs are recommended as an addition to psychotherapy in the treatment of anxiety disorders in diabetics:

- Serotonin reuptake inhibitors (SSRI's are preferred over the tricyclic antidepressants due to their better profile of side effects for patients with diabetes)
- Benzodiazepine (warning: potentially addictive; limited period of therapy)

### 3.3. Psychogenic eating disorders

Besides depression and anxiety disorders, psychogenic eating disorders are the most important mental illness in diabetic patients. Apart from the classic eating disorders anorexia nervosa and bulimia nervosa, the so-called binge-eating disorder is of great significance (hunger attacks with no counter-acting measures such as vomiting, etc.).

In terms of metabolic control, all forms of disturbed eating behaviour can have a negative effect, particularly those which include a loss of control, so-called binge eating.

- *Anorexia nervosa* is a rare illness and does not occur with any greater frequency among diabetics than among those with healthy metabolic control.
- In the past decades, a distinct increase in the prevalence of *bulimia nervosa* has been observed, approximately three to six percent of young women with diabetes suffer from this eating disorder.
- At least 90% of all diabetics with anorexia or bulimia nervosa are women.
- Young women with diabetes and anorexia or bulimia nervosa not infrequently consciously reduce their insulin to lose weight by means of glucosuria. Over time, this *insulin purging* can lead to considerable subsequent damage.
- The *binge-eating disorder* is of particular significance among type 2 diabetics since it generally occurs in overweight and obese patients. The percentage of men suffering from this illness is at least 30%.
- In young girls with diabetes, *disturbed eating behaviour* occurs more frequently than in girls with healthy metabolic control of the same age. The disturbed eating behaviour might not fulfill all criteria for e.g. a bulimic eating disorder, among others, but binge eating harbours an increased risk for the metabolic control and the development of later diabetes-related damage.

## **Diagnostics**

The physician's interview of the patient takes on a decisive role in the diagnosis of psychogenic eating disorders. The following questions should be put to patients who are under weight (BMI < 18.5), obese (BMI > 30) and/or clearly have disturbed metabolic regulation:

- In underweight patients: Is the underweight self-imposed (through fasting or excessive counter-active measures such as sports or insulin purging)? Is the patient convinced she is too fat in spite of her being under weight (disturbed body perception)?
- In patients with poor metabolism: Does the patient have binge eating attacks (consumption of large amounts of food in a short period of time; loss of control)? Does the patient have panicked fears of becoming too fat? Does the patient perform counter-active measures?
- In overweight patients: Does the patient have binge eating attacks with no counter-active measures?

In case of doubt, a specialist for psychotherapeutic medicine, a physician specialising in psychiatry and psychotherapy, or psychotherapist should be consulted.

## **Psychotherapy**

- Psychotherapy is indicated for all psychogenic eating disorders and represents the single most important method of treatment.
- Appropriate procedures are cognitive behavioural therapy, psychodynamic psychotherapy, interpersonal psychotherapy, and, particularly in young people who still live at home, family therapy.
- Psychotherapeutic treatment should be considered in the presence of isolated insulin purging since this self-destructive behaviour is accompanied by poor metabolic control.
- Early start of therapy and sufficient duration are essential to reduce the danger of chronification.
- The question of whether inpatient or outpatient treatment is appropriate should be determined by a specialist.
- As a rule, diabetic patients with a binge eating disorder are obese, requiring that all three disorder entities be taken into consideration during treatment. Consequently, a multimodal treatment concept is necessary whose integral parts comprise psychotherapy and weight management (according to the Guidelines of the German Obesity Society).

## **Pharmacological therapy**

- In the presence of bulimia nervosa, Serotonin-Reuptake Inhibitors (SSRI) can be administered in addition to psychotherapy (at higher doses they reduce appetite and hunger attacks).
- In the presence of anorexia nervosa or binge eating disorder, no specifically effective drugs are known.

## **3.4. Dependency on alcohol and nicotine**

### **3.4.1. Alcohol**

- Alcohol abuse occurs in diabetics with the same frequency as in the general population (approx. 4%). Roughly 2.4% of the population over 18 years of age is acutely alcohol dependent.
- Alcohol has a negative influence on metabolic control through its direct effect on glucose metabolism and indirectly due to the detrimental effect of alcohol consumption on self-treatment.
- There is an increased risk of diabetes-related secondary illnesses, such as hypertonicity and hyperlipidemia and diabetes-related acute and secondary complications (polyneuropathy, diabetic foot syndrome, erectile dysfunction, severe hypoglycaemia, and ketoacidoses leading to death).
- Diabetes treatment is often impeded by a lack of motivation for treatment, faulty self-treatment, and chronic effects on health from the alcohol abuse (e.g., gastrointestinal disorders) as well as by insufficient, discontinuous medical care.

## **Diagnosis**

- Early diagnosis is particularly important due to the risk of chronification and the negative effects substance dependencies have on diabetes therapy.
- Patients often exhibit a tendency to deny their alcohol dependency which needs to be taken into consideration during the diagnostic process.
- Diagnosis requires a thorough review of the drinking habits and attendant physical and psychological problems, a physical examination, and special laboratory tests.
- Screening for alcohol dependency can also proceed by means of psychometric questionnaires. Suitable for use are: the Lübeck Alcohol Dependency and Abuse Screening Test (LAST), the Trier Alcoholism Inventory, and the “Munich Alcoholism Test” (MALT).

## **Therapy**

- Every alcohol-dependent patient should be offered structured therapy as recommended in current guidelines (see the American Psychiatric Association).
- The diabetes therapy must take the dependency into account as long as the patient is unsuccessful in breaking the habit or this prospect seems unrealistic.
- Whenever possible, addiction counsellors and relatives should be involved in the diabetic care of the patient.

### **3.4.2. Smoking-related disorders**

- Nicotine dependence is the most widespread form of substance dependence in Germany. Altogether 28.3% of the population over 15 years of age (men, 34.7%; women, 22.2%) smoke in Germany. According to the ICD-10 criteria for dependence, roughly 70% to 80% of the smokers are nicotine dependent.
- The prevalence of tobacco dependence in patients with diabetes does not differ, on average, from that of the general population.
- Nicotine dependence is associated in part with poorer self-treatment behaviour and poorer metabolic control.
- Patients who have diabetes and smoke have an overall increased risk of mortality as compared to persons who have never smoked. The risk depends on the duration of smoking and the number of cigarettes smoked.
- Smokers have an increased risk of developing diabetes-related or diabetes-associated effects and complications, such as cardiovascular diseases, stroke, hypertonia, and diabetic nephropathy.
- In the case of terminal kidney disease, smoking is an important risk factor for increased mortality.
- Nicotine abstinence can improve existing proteinuria.

## **Diagnostics**

- Those affected by nicotine dependency often deny their dependency and underestimate the negative effects in terms of the risk of developing diabetes-related or diabetes-associated complications and secondary illnesses. Therefore it is essential that every patient be questioned as to his smoking behaviour.
- General questions include: the number of cigarettes (or cigars or pipes) smoked daily, the time when the morning cigarettes are smoked, the smoker's daily smoking habits, and depth of inhalation.

- To determine nicotine dependence, the Fagerström Test is recommended as it can evaluate the degree of dependency based on six questions.

### **Therapy**

- The problems posed by smoking should be addressed in every individual counselling session and structured diabetes education programme.
- Moreover, every nicotine-dependent diabetes patient should undergo a structured therapy programme to treat his or her dependency.
- We recommend the interventions given in the guidelines of the WHO, the American Psychiatric Association, the recommendations of the American Diabetes Association, and the Drug Commission of the German Board of Physicians.
- In instances where patients reject smoking cessation programmes, short interventions should be implemented repeatedly by the physician to increase the patient's motivation to stop smoking.