In Brief

Disordered eating is prevalent among people with diabetes and can significantly increase diabetes mortality and morbidity. When disordered eating behaviors are culturally accepted and performed with significant frequency by a variety of groups, it can lead to the perception that these behaviors are "normal," which can be detrimental to the prevention and treatment of diabetes. Diabetes educators are capable of improving their diagnostic skills and treatment methods to meet the special needs of people with diabetes who also suffer from disordered eating. It is important to integrate key questions into assessment interviews and to ensure that the diabetes care team has the skill, knowledge, and tools to diagnose and treat disordered eating to improve outcomes for individuals with diabetes.

Disordered Eating: Identifying, Treating, Preventing, and Differentiating It From Eating Disorders

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The primary goals of this article are to define disordered eating (DE), to differentiate it from diagnosed eating disorders (EDs), and to provide information to aid in the diagnosis and treatment of DE among people with diabetes. This article will also demonstrate how to apply these concepts to diabetes education to assist patients in reaching and maintaining normal eating behaviors and proper diabetes management. Frustration can set in for both diabetes patients and educators when DE signs are ignored and continue to be untreated because this can negatively affect diabetes management outcomes.

The importance of proper diagnosis and treatment of DE and EDs among people with diabetes cannot be overemphasized because these disorders can significantly increase diabetes morbidity and mortality[1,2] and can also lead to weight gain, poor metabolic control, insulin omission, and an increased prevalence of microvascular complications.[3]

To diagnose DE and EDs, diabetes educators need to first clearly understand the definition of normal eating. Normal eating includes the ingestion of healthy foods, the intake of a mixed and balanced diet that contains enough nutrients and calories to meet the body's needs, and a positive attitude about food (no labeling of foods as "good" or "bad," "healthy" or "fattening," which can lead to feelings of guilt and anxiety). Normal eating is related not only to health maintenance, but also to acceptable social behavior, and is both flexible and pleasurable.[4] A definition of normal eating that patients can relate to is that it is ". . . flexible and varies in response to your hunger, your schedule, your proximity to food, and your feelings."[5] It is important for patients to understand that normal eating fluctuates; however, it should not fluctuate to the point of leading to a nutrient deficiency or excess or to weight loss or gain. Thoughts about desired foods and meal planning should be part of patients' daily life, but should not dominate it (i.e., should not take a disproportionate amount of thought compared to other daily activities).

In terms of behavior, the term "normal" can refer to "not deviating from a norm, rule, or principle; conforming to a type, standard, or regular pattern or occurring naturally."[6] Therefore, once disordered eating behaviors (DEBs) are performed by a large number of people, the perception may shift to an acceptance of DEBs as normal behaviors. The normalization of certain DEBs is dangerous to people susceptible to these behaviors, and both patients and diabetes educators

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in such circumstances may ignore the detrimental effects of accepted DEBs on diabetes management outcomes. Diabetes educators may need to support patients as they move through the stages of change towards recovery from DEBs to truly normal behaviors.[7]

It is human nature to crave foods, to eat more when food is available, to eat differently because of changing social and emotional factors, to move less when modern convenient machines can substitute labor, and to be emotionally attached to foods. However, individuals also maintain different behaviors because of their own culture.

More studies on eating attitudes are necessary to help Americans adopt healthier eating attitudes for better health. Although Americans associate foods most with health and least with pleasure and make great efforts to alter their diet in the service of health, they are the least likely to classify themselves as healthy eaters.[8] Americans have a tendency to classify foods and nutrients as "good" or "bad," regardless of amounts consumed and also have some incorrect concepts related to the calorie content of a food and its volume, weight, nutrient quality,[9] and even its potential satiety factor. All these distorted eating attitudes can be detrimental to the prevention and treatment of DE because attitudes precede and influence behaviors.

The term "eating attitudes" refers to the psychology of foods in the life context (i.e., believing that different attitudes toward foods can contribute to health as a whole).[8] One should question why people eat what they eat and their rationales for their choices, barriers, aversions, and uncontrollable behaviors.[10] Eating attitudes could be defined as beliefs, thoughts, feelings, and behaviors toward foods.[11] Diabetes educators should evaluate patients' eating attitudes in conjunction with behaviors to help patients achieve proper diabetes management.

DEBs are also prevalent in many other countries,[12] and so is obesity.[13] Globalization, increased civilized conditions worldwide, and the adoption of the American culture by other countries may be some of the contributing factors. An integrated approach to the prevention of obesity and EDs is best and could include a media advocacy and literacy approach.[14,15] The power of the media over behaviors in general, including eating behaviors, cannot be ignored. Media advocacy and literacy as part of nutrition education counseling have the potential to assist people in improving eating behaviors. Various studies have suggested the need for interventions to reduce exposure to and the importance placed on media messages about dieting and weight loss.[16] Media messages can contribute to DEBs in susceptible people and can lead to clinical EDs. When behaviors such as eating in the car, eating with guilt, skipping meals, eating to cope with stress or emotional distress, binge eating, and frequent and strict dieting are not only socially accepted behaviors, but also tend to be considered common and therefore normal among people including educators, they may not be perceived as deserving proper clinical attention within diabetes education sessions.

Although there are several screening tools[17–22] for EDs and well-established diagnostic criteria,[12] these are to be considered guidelines, not rigid rules.[23] Patients who meet or do not meet these criteria may or may not be suffering from the described DEB. It takes a multidisciplinary team and in-depth assessments to truly analyze patients' behaviors in their particular context to determine the diagnosis of DE. A team approach is necessary because of the complexity of these disorders, their psychological and psychiatric nature, their obscurity, and their shady or dubious array of signs and symptoms. More interest and attention dedicated to this subject may lead to better patient care.

EDs Defined

EDs are psychiatric illnesses marked by DEBs, disordered food intake, disordered eating attitudes, and often inadequate methods of weight control. The diagnostic criteria shown below provide only guidelines for the identification and treatment of EDs because these disordered behaviors may exist on a continuum ranging from persistent dieting to the full clinical description of the ED in question.[12,23,24]

- Anorexia nervosa (AN) is marked by a serious weight loss, refusal to eat, and a disturbance in the way in which one's body weight or shape is experienced.
- Bulimia nervosa (BN) is marked by presence of binge eating episodes, followed by compensatory behaviors (e.g., vomiting or use of laxatives); self-evaluation is unduly influenced by body shape and weight.
- Eating disorders not otherwise specified (EDNOS) includes binge eating disorder (BED) and other clinically significant disorders of eating that do not meet all the criteria for clinical AN or BN.[12]

BED is a more recently recognized disorder characterized by recurrent episodes of binge eating that is not associated with the regular use of inappropriate compensatory behavior but is associated with feeling of disgust, depression, or guilt after overeating. Finally, there is also the "night eating syndrome," associated with obesity,[23] which includes a caloric intake of 50% or more after 7:00 pm, trouble getting to sleep or staying asleep, and morning anorexia.[25]

Health professionals are encouraged to expand their views to see patients as a whole person and to be aware of potentially harmful signs and symptoms of DEBs,[23] which seem to be more prevalent among members of some specific groups, including dancers, models, athletes, dietetics students, and people with diabetes.[26,27] For effective treatment of EDs, it is essential to reach a full understanding of the complexities of EDs, such as influencing factors, comorbid illnesses, medical and psychological complications, and boundary issues.[23]

DE Defined

DE includes ". . . the full spectrum of eating-related problems from simple dieting to clinical ED,"[12] such as AN and BN. DEBs could be defined as troublesome eating behaviors, such as purgative practices, bingeing, food restriction, and other inadequate methods to lose or control weight, which occur less frequently or are less severe than those required to meet the full criteria for the diagnosis of an ED. The development of DEBs is explained by biopsychosocial multifactorial models and should be viewed as a multidimensional construct with some core symptom dimensions including body image concern.[28] Although nonnormative eating patterns may not be considered mental disorders, they may be important in terms of their impact on body weight and health. Because of the wide spectrum of DEBs, this

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topic deserves adequate attention to improve diabetes management.

DE Among People With Diabetes

Among patients with type 1 diabetes, subclinical EDs and BN are prevalent, whereas among patients with type 2 diabetes, subclinical and clinical DEBs are more prevalent.[29] In addition to their individual psychiatric predisposition, people with diabetes may be more susceptible because of the nature of this chronic disease. It has been hypothesized that the relationship between diabetes and EDs may be explained by patients' feelings of body dissatisfaction, desire to lose weight because of insulin-related weight gain, feelings of obsession with food, feelings of lost control, belief that diabetes is controlling their life, and experience of independence or dependence conflicts.[30]

Although the literature is still inconclusive about prevalence,[29] various estimates are quite significant: adolescents with diabetes may have a 2.4-fold higher risk in developing an ED,[31] and there is a 15.7-fold increase in mortality of females with diabetes and AN when compared with females with diabetes alone.[2] Some studies indicate that there may not be considerable differences in the prevalence of EDs between people with diabetes and the general population.[32] However, others suggest that, in the case of type 1 diabetes, there is no difference for prevalence of AN, but the prevalence may be higher for BN and diabetes combined, and type 1 diabetes is associated with a higher prevalence of BN in females.[33] In terms of specific behaviors, 27% of adolescent type 1 diabetic patients use purgative practices, and 24% restrict their diets to try to lose weight.[31] The omission of insulin or the taking of reduced doses to promote weight loss could be practiced by 15–37% of women[34,35] and 34% of adolescents.[3]

It is important to note that EDs/DEBs seem to precede type 2 diabetes among most patients (nearly 90%) and therefore could be a contributing cause of obesity that often precedes type 2 diabetes.[32] The cumulative incidence of eating problems continues to increase after young adulthood.[36]

The detailed meal planning, precision in food portions, psychological issues, and constant monitoring related to diabetes management may place patients at higher levels of concern with health and foods, making the detection of EDs or DEBs more difficult among this susceptible population. The concurrence of EDs, DEBs, and diabetes, and increased mortality rates, such as in the case of AN,[37] make recognition of these conditions and carefully coordinated treatment by multidisciplinary teams necessary to improve diabetes treatment outcomes.

Disordered Eating in Adults

DE among the young is a popular and prevalent topic, but the media and health professionals are now focusing more attention on the prevalence of DE among older adults experiencing it for the first time when they are middle-aged or older. DE can be trigged, in susceptible adults, by stressful life conditions, divorce, death of a partner, hormonal changes, children leaving the house, and other changes in life circumstances. Obsessions and preoccupations with food intake can be a way to regain control of life and may lead to clinical ED.[38] Diabetes educators are likely to encounter 6.5–25.6% of people with diabetes who also have an ED, DE, or DEBs (which are the most prevalent).[39–41] The treatment for DE must follow the general orientation for EDs treatment within a multidisciplinary team, with a presence of a specialist in diabetes to assist in the management of diabetes during treatment. It is the educator's role to understand that weight gain and dieting, common among people with diabetes, can deteriorate eating attitudes and that EDs also tend to persist over time, with a considerable shift among different types of ED.[42]

Disordered Eating in Children and Adolescents

EDs may be as common in young Hispanic and Native American women as in Caucasian women and less common among African-American and Asian women in the United States.[22,43,44] In adolescent females with diabetes, the increased focus on eating and the weight gain associated with good glycemic control likely increase susceptibility to abnormal eating. In adolescents with type 1 diabetes, subclinical DEBs are observed rather than fully manifested AN or BN.[1,45] These include higher body dissatisfaction and more high-risk weight loss practices, such as vomiting and laxative or diuretic use,[45] binge eating, excessive dieting, and insulin omission for weight control or loss.[1] Concern over weight and shape and dietary restrictions also increase significantly from adolescence to young adulthood, and insulin omission prevalence can range from 7 to 30%.[27,46]

A brief psychoeducational intervention can lead to a reduction in disturbed eating attitudes and behaviors but is not sufficient to improve metabolic control. More intensive treatment approaches, which should include a family-based component, may be needed.[47] Special attention is needed for youth with weight concerns and for those from less cohesive families to assist in the development of behaviors to achieve optimal diabetes management. Diabetes management, and the constant monitoring of blood glucose and adjustment of insulin, may increase DE in adolescents.[48] Therefore, DEBs must be recognized and addressed in conjunction with nutrition counseling and traditional diabetes education to ensure successful outcomes. The proper nutritional approach in these cases must include a balance of slow weight gain and/or maintenance with diabetes meal planning, offer realistic goals instead of optimal ones, and include very flexible meal planning strategies without emphasis on specific carbohydrate counting until the DE is more manageable.

Pubertal changes in body shape and weight predispose some adolescent females to develop unhealthy eating attitudes; weight gain after insulin treatment can lead to increased body dissatisfaction; and dietary restraint, weight gain, and food preoccupation can be perceived more strongly by adolescents with type 1 diabetes because of the nature of its management and may lead to the use of unhealthy weight control behaviors.[27] Therefore, even temporal proximity of diabetes onset and onset of puberty must be taken into consideration among adolescents.[29]

Family-based interventions tailored for this population are recommended because families may not understand the nature of EDs and can contribute to the problem.[1] Maternal weight and shape concerns and impaired mother-daughter relationships can be related to eating disturbances in girls with diabetes;[49] parents are often unsure of the appropriate limits for youth with diabetes.[27] Families of girls who have type 1 diabetes and

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DE are more likely to be classified as having a low level of meal structure (e.g., infrequent family meals), and the prevalence of families with a parent engaging in behaviors to lose weight or making negative comments about eating or weight is also higher in families of girls with DE.[50] Development of specific coping strategies for the behavioral issues adolescents face is necessary for better quality of life and metabolic control.[51]

Identifying, Treating, and Preventing DE

A trained multidisciplinary team can prevent and treat DEBs. Registered dietitians and diabetes educators in general, especially those with a background in EDs, can identify unhealthy eating behaviors by conducting a nutrition assessment and by obtaining a diet history to elucidate current eating habits. Social workers or psychologists can identify any concerns about weight, body image, or self-esteem, as well as any common comorbid mental health issues.[1]

Upon identification of these behaviors, proper treatment can be implemented. However, in the case of EDs (probably also true for DEBs), it is known that certain strategies thought to be good for treatment and prevention can in fact bring negative effects, and vice versa.

Treatment must begin with emphasis on nutrition rehabilitation, weight restoration, and adequate diabetes control. The insulin regimen must be monitored, and education about diabetes management and potential complications must be provided to patients and families.[1]

Diabetes management may lead to the dysregulation of eating patterns, which can be triggered by eating based on external cues instead of in response to internal cues, such as hunger.[52] Therefore, diabetes educators should be aware of the potential warning signs (behavioral, psychological, and medical) of DE in patients with diabetes as well as assessment and treatment options for EDs with concomitant diabetes.

In the case of EDs, there are specific diagnostic criteria, but in the case of DEBs, there is no specific definition or diagnostic criteria, but only a list of behaviors and attitudes (also commonly seen in ED cases). Standardized instruments used in EDs can be used to evaluate individuals' perceptions and concerns about body shape, weight, dietary restraint, and eating behaviors, as well as the incidence of bingeing, purging, and diet-limiting behaviors. However, these must be used very carefully in the diabetic population because these patients are restricting and monitoring their eating consumption for their diabetes management, which does not necessarily indicate an ED. Beyond the application of ED instruments, proper interviews must be performed to collect the relevant information and assist in clarifying the context in which behaviors are performed. Insulin omission, for instance, is not covered in such ED instruments and can be common among people with diabetes.[1]

During diabetes education sessions, rapid weight loss or gain, elevated hemoglobin A_{1c} (A1C), and recurrent diabetic ketoacidosis can be measured. However, poor body image and low self-esteem are subjective and usually are not part of the diabetes education assessment. Therefore, it is necessary to be sensitive to patients' eating attitudes to clarify, with the help of a multidisciplinary team, the diagnosis and treatment of EDs. Diabetes educators must go beyond the usual assessment questions and read between the lines to identify the symptoms of EDs. Behaviors pertinent to DEBs can be easily hidden by patients either because they do not understand their importance or because they fear being criticized. Many patients believe that their purging and restrictive techniques work to help them manage both their weight and health and thus may not discuss it. Monitoring signs of weight change or variations in blood glucose management can provide tips about the possibility of such DEBs.

In the case of adolescents, parents/caregivers must be included in the assessment and treatment of eating behaviors to add the information necessary to reach a diagnosis and determine treatment options. For all patients, adult, adolescent, or child, diabetes educators must choose the proper assessment, tools, and approaches for the diagnosis and treatment of DEBs.

Diabetes educators should assess patients' eating behaviors to identify those that could indicate an exaggerated worry regarding foods, meals, and weight. Such beliefs and feelings can be assessed through simple questions such as the ones listed in Table 1. However, some questions should be avoided (also in Table 1) because they may induce such behaviors by giving ideas to patients who may never have thought of performing them.[53]

For some patients, it would be advisable and useful to request a food *(Continued on p. 146)*

Table 1. Questions for the Assessment of Eating Behaviors

Preferred questions:
- How do you feel when you eat beyond what was planned for your meal?
- What do you do after you feel that you ate more than you planned?
- What do you believe you need to do when you feel you overate?
- How do you feel your weight will change when you have an episode of overeating?
- How would you rate your ability to maintain your healthy weight with meal planning, physical exercise, and blood glucose monitoring?
- As a person with diabetes, how do you feel having diabetes affects your eating and your weight?
- What techniques do you believe to be most effective to balance your weight and manage your diabetes?

Questions to be avoided:
- Have you been purging?
- Have you ever purged after eating or have you ever considered purging?
- Have you been bingeing?
- How many pounds would you like to lose to be happy about your body?
- Do you often skip meals?
- Have you ever used laxatives or other medications to help with weight loss?

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(Continued from p. 144)
diary with daily records of food intake, including meal times and feelings associated with each meal. Some patients may have difficulties talking about such behaviors during education sessions but may be able to report them clearly in a food diary. Discussion about the completed food diary in an education session can elucidate suspected behaviors and clarify doubts about eating behaviors that could be potentially DEBs.

Programs that describe direct information about EDs are not adequate for prevention[53] because they can introduce certain beliefs and behaviors preceding EDs, such as practiced diets, purging, and the use of laxatives, and thereby normalize such behaviors. Negative attitudes, such as labeling foods or nutrients as "good" or "bad," can contribute to patients' fear of foods, fats, or weight gain and aggravate eating problems. The professional team can also negatively affect patients if they are not careful with their own negative beliefs and attitudes, including negative body image and prejudice against overweight and obese people.[53]

It is crucial that diabetes educators become familiar with the signs and symptoms of EDs and DEBs. Risk factors for DEBs in diabetes include rapid weight loss or gain; insulin omission; poor body image; frequent dieting; purging behaviors, such as excessive exercise, laxative/diuretic use, or vomiting; elevated A1C; recurrent diabetic ketoacidosis; low self-esteem; and bingeing.[1]

By and large, it is highly recommended that diabetes educators acquire more advanced training levels in EDs and DEBs, either through self-study, continuing education programs, or supervision by other experienced professionals to achieve better outcomes with patients.[23] Suggested Internet resources are listed in Table 2.

Recommendations for Diabetes Educators

Although we all occasionally eat irregularly for one reason or another, diabetes educators must place extra attention on identifying the purpose and consistency behind certain eating behaviors of patients to properly diagnose and treat DE in this population. It is unrealistic to expect successful outcomes in diabetes management without proper treatment of DE.

Table 2. Internet Resources

National Eating Disorders Association: http://www.nationaleatingdisorders.org
National Eating Disorder Information Centre (Canadian): http://www.nedic.ca
About Face: http://www.about-face.org
Beyond Dieting (Canadian): http://www.beyonddieting.com
The Body Positive: http://www.thebodypositive.org
The Council on Size and Weight Discrimination: http://www.cswd.org
Center for Weight and Health at the University of California, Berkeley: http://www.cnr.berkeley.edu/cwh
Girl Zone: http://www.girlzone.com
The Healthy Weight Network: http://www.healthyweightnetwork.com
Hugs International: http://www.hugs.com
California Adolescent Nutrition and Fitness Program: http://www.canfit.org
National Association to Advance Fat Acceptance: http://www.naafa.org

The role of diabetes educators in patients' diabetes management is so essential and influential that it could be recommended that diabetes educators adopt the recommendations suggested to pediatricians in terms of dealing with patients with EDs. These include being knowledgeable about the early signs and symptoms; being aware of addressing weight concerns with careful balance; being familiar with screening and counseling guidelines; knowing when and how to monitor and refer patients with DEBs; playing a role in primary prevention; and working locally and internationally to help change cultural norms conducive to DEBs and to change media messages.[12]

Diabetes educators should identify specific behaviors, such as uncontrolled diabetes or early manifestations of complications despite rigorous therapy; elevated A1C, especially in a knowledgeable patient; diabetes that is controlled only when patients are hospitalized; under-dosing of insulin to avoid weight gain or reluctance or refusal to take more insulin; frequent hypoglycemia; poor adherence to diabetes regimen as reported by family members; delay in puberty, sexual maturation, or growth with a normal A1C; dyslipidemia; refusal to let others witness injecting insulin; anxiety about being weighed or refusal to be weighed; and frequent requests to change nutrition care plans to restrict diets.[54]

Diabetes educators can acquire the proper competencies to add the skills necessary for the prevention and treatment of DEBs among their patients and collaborate even more with patients and other health professionals to help individuals with diabetes improve their health.

In essence, diabetes educators can routinely adopt positive approaches for the prevention and treatment of DEBs. These may include decreasing patients' body image dissatisfaction by using exercises that help individuals accept different body types; creating strategies to help patients criticize current beauty patterns and set more realistic weight expectations; developing patients' critical thinking about sociocultural norms to evaluate media messages about body shapes, sizes, and nutrition; helping patients recognize that puberty and genetics change and determine body shape; increasing patients' knowledge about

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nutrition and healthy body weight; helping patients accept that all foods are good and that food restriction is not helpful; helping patients develop skills regarding proper selection and preparation of foods and physical activity; helping patients increase the availability of attractive nutritious foods at home, in schools, and in restaurants; and promoting healthy eating.[31,55–58]

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