

**Type 1 Diabetes and Eating Disorders: The Importance of Healthcare  
Provider Knowledge of Eating Disorders in Type 1 Diabetes**

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## **Abstract**

Type 1 diabetes affects more than 3 million people in the United States and the rate of incidence is increasing on a global level (Atkinson, 2014). The diagnosis of type 1 diabetes often occurs prior to or during adolescence and the disease requires a high level of self-management. Adolescence is a challenging time for many adolescents especially in regards to body changes, weight gain and body image. Due to the added burden surrounding food with type 1 diabetes, disordered eating is more likely to occur. The rate of eating disorders in individuals with type 1 diabetes is as much as two times higher than that of their nondiabetic counterparts. Eating disorders and type 1 diabetes can lead to poor clinical outcomes including neuropathy, nephropathy, retinopathy, and even death. Often the presence of an eating disorder is not known until those complications develop, and there is little that can be done to reverse the damage. It is difficult for healthcare providers to detect eating disorders in those with type 1 diabetes due to a lack of education, training, and criteria to diagnose.

The goal of this project is to review existing literature for eating disorders among individuals with type 1 diabetes. This literature review also addresses the lack of current diagnostic criteria for the diabetes-specific eating disorder, diabulimia, creating a gap in knowledge for many healthcare professionals. Very few guidelines and support are provided for healthcare providers, therefore an approach on how primary care providers and endocrinologists can better address the needs of individuals with type 1 diabetes and eating disorders is presented.

## **Introduction**

Type 1 diabetes affects more than 3 million people in the United States, and every year more than 30,000 children and adults are newly diagnosed (Atkinson, 2014). Type 1 diabetes

requires a high level of self-management and discipline, a job that can be difficult for a person of any age, but particularly challenging for adolescents and young adults. Adolescence is a trying time for anyone, but with the added burden of managing a chronic illness, there is an increased risk of comorbidities (Bernstein, 2013). Any chronic illness, including type 1 diabetes, is a risk factor for health-related comorbidities and recent research has shown that it may also be a risk factor for psychiatric illnesses. In the general population, it is estimated that 11% of high school students have been diagnosed with an eating disorder ([www.anad.org](http://www.anad.org)). According to a recent study conducted at Columbia University, out of 150 patients with type 1 diabetes aged 11-25 years old screened, 11.3% had depression, 21.3% anxiety, and 20.7% with disordered eating. The statistics surrounding type 1 diabetes and eating disorders are alarming compared to those for individuals without diabetes. Those with type 1 diabetes are more likely to suffer from disordered eating than their nondiabetic counterparts, by almost twice as much.

## **Background**

Type 1 diabetes is an autoimmune disease in which a person's insulin-secreting beta cells of the pancreas are destroyed. Without insulin, the body cannot convert carbohydrates into energy, and the body begins to use fats, and then proteins for fuel. The imbalance of energy use causes rapid weight loss and a buildup of sugar and acidic components in the blood. Having more sugar in the blood than within normal limits is called hyperglycemia. Type 1 diabetes is thought to be caused by both genetic and environmental factors, but there is nothing that can prevent it. No cure for type 1 diabetes exists.

Currently, treatment for type 1 diabetes exists in different modalities, but ultimately relies on the body receiving daily insulin. Before insulin was discovered in 1921, type 1 diabetes was

fatal within a few years after diagnosis. Patients were put on a strict “starvation” diet that limited carbohydrates, but without insulin the person would still die. With the discovery of insulin, millions of lives have been saved over the last 96 years.

Those with type 1 diabetes must administer insulin either by taking multiple injections throughout the day or with the use of an insulin pump. Those taking injections give 5-10 injections on average per day. An insulin pump continuously delivers insulin through a cannula inserted into the body and is changed out every three days. The pump will give background insulin all the time, but the user must dose insulin when eating or in times of hyperglycemia. Insulin pumps provide a sizable amount of freedom from a rigid diet and exercise plan, but still require constant attention to keep glucose levels within range. There have been numerous treatment advancements in the recent years including continuous glucose monitors, tubeless insulin pumps, the hybrid closed-loop system, and diabetic alert dogs. Even with all of the latest technological advancements type 1 diabetes continues to require constant monitoring.

Although insulin is the treatment for type 1 diabetes, it is a complex and demanding medication regimen. Blood glucose levels and insulin requirements vary from person to person and are contingent upon many factors, such as time of day, if and what the person eats, exercise, stress, illness, normal growth and development, as well as many other aspects of a person’s daily life. Due to these influences on blood sugar levels, including those outside of their control, many people struggle with taking their medication regularly and effectively, which can cause many immediate and long-term complications. Poorly managed diabetes can lead to numerous health complications including retinopathy, neuropathy, nephropathy, and cardiovascular disease resulting in kidney loss, blindness, amputation and even death. Damage to the eyes, kidneys and peripheral nerves is due to prolonged hyperglycemia. During repeated episodes of

hyperglycemia, an excessive amount of sugar in the bloodstream puts strain and pressure on the blood vessels, especially smaller vessels, throughout the body.

## **Eating Disorders**

### **Anorexia Nervosa**

Anorexia nervosa is the strict restriction of caloric intake leading to severe weight loss (Outten, 2015). These behaviors begin from a distorted body image and intense fear of weight gain, even if the individual is underweight or at a healthy weight. Anorexia has severe complications including low blood pressure, heightened heart rate, dehydration, anemia, osteoporosis, heart problems, and varying hormonal imbalances. These complications are even more dangerous when paired with a chronic illness like type 1 diabetes. Concurrent anorexia and type 1 diabetes is relatively rare, especially in comparison to the rate of the more common diabetes-specific eating disorder. Although it is rare, it is extremely dangerous. According to a study conducted at Aarhus University in Aarhus, Denmark, the mortality rate of those with both type 1 diabetes and anorexia nervosa is 34.8% (Nielsen, 2002). For perspective, the mortality rate for only type 1 diabetes is 2.5% and the mortality rate for anorexia alone is 6.5 %.

Individuals with type 1 diabetes and anorexia are almost 6 times more likely to die than their nondiabetic counterparts with anorexia. The jump from 6.5% to 34.8% is significant, especially due to the fact that anorexia nervosa is the most fatal among all psychiatric diseases. Although the sample size of women with both disorders was relatively small (23 people), the study provides valuable insight into the increased danger of eating disorders in those with type 1 diabetes.

## **Bulimia Nervosa**

Bulimia nervosa is an eating disorder with repeated cycles of binge eating followed by purging in an effort to rid the body of calories to avoid weight gain (Davidson, 2011). Purging activities can include vomiting, the use of laxatives and diuretics, or excessive exercise. Individuals with bulimia also have a distorted view of their body and a fear of weight gain. An identifying feature of eating disorders that involve binge eating is the feeling of having no control over eating; people will continue to eat even after becoming uncomfortably full. Many individuals with bulimia are of normal weight, but over time will start to display complications of the disorder itself. It is often hard to detect bulimia because there may not be significant weight loss and those individuals are often very secretive about their behaviors. Complications of bulimia nervosa include acidic damage to the teeth, sores in the mouth and throat, dehydration, electrolyte imbalances, dry skin, fatigue, and irregular menstrual cycles in women. While people with type 1 diabetes can have bulimia nervosa, it is less common as the other eating disorders. Thus there is little research surrounding the typical diagnosis of bulimia in individuals with type 1 diabetes.

## **Binge-Eating Disorder**

Binge-eating disorder is defined as frequent binge eating episodes where a large amount of food is consumed in a short period of time, accompanied by feelings of loss of control over eating (Latner, 2008). Binge-eating disorder and bulimia nervosa are similar in that they both include episodes of overindulgence of food, but those with binge-eating disorder do not maintain those purging behaviors. It can be difficult to detect binge-eating disorder because individuals are often overweight, but not every person who is overweight has binge-eating disorder. Binge-

eating disorder may be over represented in the type 1 diabetes population due to the often strict diet that individuals hold themselves to. It is reported that of 356 adolescent girls with diabetes, one-third reported binge eating. Through further study, it was indicated that individuals with type 1 diabetes saw much smaller quantities as binges compared to those without diabetes. It is important to note that there are still feelings of guilt and loss of control during the binges (Rydall, 2002). In those with diabetes, binges can also be triggered by episodes of hypoglycemia, or low blood sugar. Through a self-report survey, over 40% of the 276 individuals indicated that they felt as if they lost control of eating during a hypoglycemic blood sugar. Those who indicated this loss of control also reported feeling bad or guilty about eating in a disinhibited manner (Merwin, 2014).

Binge-eating is often paired with a compensatory purging behavior, but clinicians have seen an increase in binge-eating without purging behaviors due to an improvement in types of insulin. In the last 20 years, newer insulin has been created to provide more immediate action to reduce blood sugar levels. Some healthcare providers believe this has led to disordered eating behaviors because people with diabetes are no longer required to maintain a strict diet and eating schedule (Tierney, 2009).

### **Diabulimia**

Many factors can affect the onset of an eating disorder in adolescents with type 1 diabetes, but estimated to be one of the largest contributors is the weight loss before a diabetes diagnosis and the following weight gain after insulin treatment is initiated (Jones, 2000). Other factors include the tendency for those with type 1 diabetes to have a higher body mass index (BMI), the restriction of food choices, and the ease of availability to misuse insulin for weight

loss. The disease requires diligent carb counting, insulin administration, constant monitoring of food intake and food labels, regular physical activity, cutting back on carbohydrates and sugar, and routine visits to the doctor. Sticking to these habits are what give a person with type 1 diabetes optimal glycemic control, but this diligence can become a burden to the person with diabetes or the caretaker.

Although an individual with type 1 diabetes is able to have any of the eating disorders mentioned, there is a disorder specific only to those who take insulin. The disorder is termed as diabulimia. Diabulimia describes the act of insulin omission in an effort to lose weight. Taking insulin in amounts less than prescribed causes hyperglycemia and ultimately glycosuria, or sugar in the urine which causes weight loss (Davidson, 2014). When sugar leaves through the urine, it is as if those calories were never consumed. Therefore, no nutritional value is gained from the food, resulting in weight loss.

Individuals, especially females, with type 1 diabetes are particularly susceptible to diabulimia during adolescence and young adulthood. It is estimated that between 10 and 30% of teenage females with type 1 diabetes underuse insulin on a regular basis for weight loss (Davidson, 2014). For both males and females, adolescence is already the time for the poorest glycemic control due to non-adherence. Adolescents can neglect diabetes self-care by not taking insulin, not checking blood glucose levels, and not attending scheduled doctor's appointments. It is important to note that not all individuals who report mismanagement of insulin use have diabulimia. There are a number of other factors including social relationships, fear of embarrassment, increased independence, and comorbid psychiatric disorders that are not eating disorders, that may affect levels of self-care. The development of an eating disorder after a type 1 diabetes diagnosis can be contributed to a multitude of factors, one of the most prominent being



the fluctuation of weight before and after diagnosis. Prior to diagnosis, many will lose weight, up to as much as 20 pounds, and when an insulin regimen is started they gain that weight back and sometimes more. The requirements of a diabetes treatment regimen is another factor that can lead to psychological effects and potentially contribute to the development of an eating disorder. Managing blood sugars requires constant diligence and attention to one's body and actions, which can become tiresome.

Insulin misuse is the most common form of weight control for people with type 1 diabetes because of the ease of access. It is often easier to eat a normal amount or greater than normal amount and not take insulin, than to binge and purge or restrict calories, as is seen with more common eating disorders in the general population. Often young girls will partake in some insulin omission or dieting which would not meet the criteria for an eating disorder, but the behaviors and attitudes can be equally dangerous and can still lead to a diagnosable eating disorder. Often the behaviors will not be considered a diagnosis of an eating disorder until the insulin restriction has been continuous for at least three months and occurs at least three times per week. Statistics among young women with diabetes and any type of disordered eating behaviors or attitudes would likely be much higher than those indicated, if subthreshold eating disorders were also included.

### **Clinical Outcomes of Diabulimia**

Constant hyperglycemia due to a lack of sufficient insulin, common among young women, leads to a higher hemoglobin A1c which is the main test for physicians to determine the level of metabolic control. The hemoglobin A1c test determines the amount of glucose that is attached to hemoglobin which is determined by the amount of sugar in the blood. Generally it

gives an average blood sugar for the previous 6-8 weeks. Those with disordered eating behaviors had significantly higher A1c levels compared to those with little or no disordered behavior (Rydall, 2002). Insufficient insulin and disordered eating can cause dire complications for an individual with type 1 diabetes including retinopathy, nephropathy, neuropathy, and even death. Multiple studies have shown that adolescents with type 1 diabetes and a comorbid eating disorder have poorer glycemic control and higher incidence of early-onset complications due to prolonged hyperglycemia (Davidson, 2014).

Both short-term and long-term complications can arise from insufficient insulin use. Common short-term complications include diabetic ketoacidosis and frequent hospitalizations, often due to diabetic ketoacidosis. Severe hypoglycemia can be a problem for those who omit insulin and restrict caloric intake, leading to diabetic ketoacidosis (Rydall, 2002). Diabetic ketoacidosis is when the body is using only fat for energy needs, resulting in a buildup of ketones, a molecule left after the degradation of fat. A buildup of ketones ultimately causes the blood to become slightly acidic, and creating a medical emergency for the patient. While short-term complications are extremely dangerous at the moment, long-term effects of hyperglycemia can severely impact a person's quality of life. With prolonged hyperglycemia, microvascular structures throughout the body can be irreparably damaged. The most common blood vessels damaged are found in the eyes, kidneys, and peripheral nerves, specifically in the extremities. The relationship between eating disorders and complications is demonstrated through a study focused on retinopathy. After 4 years of indicated disordered eating, 86% of those considered to be have highly disordered habits had some degree of diabetic retinopathy. While there are many risk factors and contributors to retinopathy and other complications, eating disorders directly contribute to a higher risk of those complications. Disordered eating behaviors and disturbed

perception of appearance that do not meet the full criteria for a clinical diagnosis of an eating disorder can still have an impact on metabolic control and increase the risk for short- and long-term complications. After only four years of indicated disordered eating, individuals had a threefold increase in retinopathy compared to those in the same study with no disordered insulin use. While microvascular complications can arise with the absence of an eating disorder or insulin omission, it is much less common. It was found that the factor most linked to diabetic complications is the duration of insulin omission, where insulin omission was at least one-quarter of the prescribed dosage (Takii, 2008).

Due to the difficulty of treatment and recovery involving type 1 diabetes and eating disorders, remission is extremely common. Through a 4-year longitudinal study, those considered to have highly or moderately disordered eating behavior at the baseline assessment, 60% of the individuals continued to exhibit the same behaviors 4 years later (Rydall, 2002). Disorder eating behaviors also tended to increase in frequency as the women moved into late adolescence and young adulthood.

## **Prevention and Treatment**

Prevention of diabulimia and other eating disorders can be extremely helpful as persistence of eating disorders and recurrence is extremely high (Colton, 2015). According to a longitudinal study of 126 young girls, 92% of those who reported any disordered eating behaviors, including insulin misuse, continued those behaviors after a 5-year follow up. Furthermore, some studies report that while adolescence is the most common time for eating disorders to emerge, young adults may be at an even higher risk. According to a study of adolescent girls between the ages of 13-18 with type 1 diabetes, 14% admitted to deliberate

insulin restriction in the hopes of controlling weight gain. After 4 years, the same women were reevaluated and there was a significant increase in those omitting insulin, up to 54% (Rydall, 2002). While adolescence is a common time for insulin restriction, young adulthood with little to no parental supervision or support, may be an even more likely time for an eating disorder to appear.

While many believe that education and intervention strategies could decrease the likelihood of an eating disorder, research states otherwise. Patients usually have access to age-specific literature, support from nurses, certified diabetes educators, and physicians, and constant doctor's appointments that should combat the onset of an eating disorder. Despite the interventions and education available, medication nonadherence and disordered eating is still fairly common among adolescents and young adults (Davidson, 2014). Much more is necessary for behavioral change and developing coping skills. Scare tactics such as describing potential complications of insulin restriction has been shown to not work in preventing insulin misuse (Jancin, 2011). Diabetes care providers must bring up the topic of eating disorders at an early age, otherwise it may be too late if they wait until a patient is well into adolescence (Tierney, 2009). Disordered eating behaviors or insulin restriction can begin as young as 10 or 11 years old. While many providers were worried that bringing up the topic may be detrimental to the patient and actually cause or increase insulin misuse, that is unlikely the case. Starting a conversation with a young patient is much more likely to expose any potential disordered behaviors than to actually cause those problems.

Eating disorders can be particularly lethal and require very specialized treatment and extensive recovery time. Type 1 diabetes provides another challenge as complications of diabetes can also arise. Treating the combination of an eating disorder and type 1 diabetes is a daunting

task and healthcare professionals are often unequipped to do so (Allan, 2015). Very few guidelines exist for this extremely specific group of patients, and many healthcare providers specialized in eating disorders do not feel qualified to treat both disorders. It has been reported that standard treatment for eating disorders appears to lead to an improvement of psychological well-being, but does not relate to an improvement of diabetes management (Olmsted, 2002). Thus, a specialized treatment plan is absolutely necessary for those with type 1 diabetes. Treatment can either be in an outpatient or inpatient setting. Many individuals treated choose outpatient treatment since inpatient treatment can be lengthy and expensive. Treatment of diabulimia, as with any eating disorder, requires a highly-skilled multidisciplinary team including physicians, nurses, dieticians, psychologists, and potentially psychiatrists (Goebel-Fabbri, 2009). The treatment is aimed at achieving small goals, preventing further episodes of diabetic ketoacidosis (DKA), for example. It is also important for physicians and patients to improve blood sugars gradually over time. If the patient has been running high blood sugars for an extended amount of time, often in the 250-400 mg/dL range, they will feel the symptoms of hypoglycemia at a much higher blood sugar level. The initial treatment of diabulimia can take months, and there will be an ongoing need for medical and psychological appointments in the case of both inpatient and outpatient treatment.

### **Healthcare Provider Knowledge**

Currently diabulimia, the most common eating disorder among individuals with type 1 diabetes, is not recognized as a medical or psychological diagnosis, rather a patient would be diagnosed with bulimia nervosa or eating disorder not otherwise specified (EDNOS) (Allan, 2015). With a lack of formal diagnostic criteria it is particularly difficult for physicians or mental

health care providers to detect and diagnose diabetes-specific eating disorders. Individuals have reported being told that diabulimia “does not exist” or was “made up on the internet” by healthcare professionals when bringing up the term for diagnosis. Patients and families often use the term diabulimia, but many healthcare professionals do not accept the it. In the United States many clinicians are adjusting the criteria for bulimia nervosa and including insulin omission as a compensatory purging behavior (Davidson, 2014). However, a diagnosis of bulimia nervosa still does not address the problem of specialized care for those with type 1 diabetes and eating disorders.

According to a survey of 20 healthcare providers of type 1 diabetes, no screening tool is used to detect eating disorders. They rely on intuition, experience, and physical signs to detect disordered eating and insulin omission (Tierney, 2009). Almost all providers admitted to hesitancy of bringing up the issue with patients unless they had a strong rapport with the patient. It can be difficult to build a rapport with patients when only seeing them for a short time, averaging 30 minutes, every 3 months or even longer. It seems that providers are not addressing the issue of eating disorders and providing further assessment or intervention, even if it is suspected. Every diabetes provider admitted they did not feel equipped in their education to tackle eating disorders and that it was never covered in their professional training, at meetings or conferences, or job training. Time was also an issue for many as most physicians do not have the time with their current patient workload to take on treatment of eating disorders which requires much more care and time dedicated to a single patient for an extended amount of time. While most providers look to clinical psychologists, they also had neither the knowledge nor resources to treat diabetes-specific eating disorders. They required the continued knowledge and support of those well-versed in type 1 diabetes.

Without full integration of mental health services and diabetes care, patients with disordered eating habits and insulin omission lack the multidisciplinary care that is needed to address the challenges associated with type 1 diabetes and eating disorders. There are physicians who are experts in diabetes care, as well as psychologists or psychiatrists who are experts in mental health disorders, specifically eating disorders, but there is an extreme lack of those who would be qualified in both areas.

### **Available Screening Tools**

Little research exists providing evidence of the efficacy of different screening tools used to detect disordered eating in type 1 diabetes patients. The American Diabetes Association recommends that anyone with type 1 diabetes be routinely screened for depression, distress related to diabetes, anxiety, and eating disorders. Yet, there are very few diabetes-specific tools for endocrinologists or primary care providers to use, and many do not have access to mental health care providers beyond the initial assessment. Many of the screening tools used in the general population may not be sufficient for type 1 diabetics, as some of the flagged items are appropriate for a person with diabetes (Doyle, 2016). While counting and/or restricting carbohydrate intake is normal for an individual with type 1 diabetes, it would be considered abnormal for anyone else. Due to the nature of diabetes and food, many assessments may be overestimating the amount of disordered eating in those with type 1 diabetes. Furthermore, most screening tools do not include questions regarding diabetes-specific behaviors such as insulin omission. There are 3 screening instruments that have been modified for type 1 diabetes, but these are still extremely new and little research is provided to support these assessments.

Many healthcare providers specified concern for the amount of time regarding the testing and treatment of individuals with type 1 diabetes and eating disorders (Tierney, 2009). Using a screening set up interview-style may be difficult for providers to integrate into their busy clinic duties. However, a self-report questionnaire could combat many of these concerns, as a patient could use their time waiting for a physician to complete the survey. If concerns were raised from the patient's answers, the physician could then further evaluate and begin treatment intervention (Markowitz, 2010). One such tool has been tested and proven to be effective among adolescents with type 1 diabetes. The Diabetes Eating Problems Survey was created over ten years ago, but recently updated to reflect the changes in technology and diabetes management. The survey includes 16 statements that individuals rank on a six-point scale ranging from "never" to "always." Some of the statements include: "Losing weight is an important goal for me," "I feel fat when I take all of my insulin," and "I would rather be thin than to have good control of my diabetes." While this survey cannot diagnose an eating disorder, it gives the provider reliable information on whether or not they should conduct further testing and evaluation in regard to eating disorders. One issue with this specific screening process is that body dissatisfaction or body image concerns are not addressed, only disordered eating behaviors are acknowledged. Other researchers have recommended using the Eating Disorder Inventory- 3 Risk Composite as a more comprehensive screening. While it may be more comprehensive, a trained psychologist is necessary to administer, score, and interpret the results, and there may be a cost associated with obtaining the test (d'Emden, 2014). As time and training were the most common concerns for providers, it seems that an easy screening tool that can be used for all patients may be the more preferred form. One other screening instrument that may fit the needs of both healthcare providers and patients with diabetes is the SCOFF-ED test modified for type 1 diabetes. There



are only five questions for the patient to answer surrounding vomiting, losing control over eating, losing weight, body dissatisfaction, and insulin omission (Doyle, 2016). Although there is little research determining the validity of the test, it provides another tool for clinicians to use.

Regardless of the tool used, it is imperative for providers to be conducting screenings for eating disorders in adolescents with type 1 diabetes, especially young women.

### **Recommendations**

Mental health care is beginning to become more accepted by society, and easier to access. Therefore, little research exists on the effectiveness of education, training, and treatment, compared to traditional medicine. Chronic illnesses, especially type 1 diabetes, are warranting the need for these two disciplines to be integrated so both physical and mental health are addressed. The first step to effective prevention and management of eating disorders in individuals with type 1 diabetes is providing additional education and training to healthcare professionals in this field. Training in regard to type 1 diabetes and mental health disorders must occur concurrently at the level of the endocrinologist or diabetes care providers as well as at the level of psychologists who may interact with patients who have type 1 diabetes. Diabetes care specialists need both educational and situational training to address needs of the diabetes population with eating disorders. Many physicians, dieticians, and certified diabetes educators rely on only their experience, intuition, and the physical signs of insulin use and/or disordered eating (Tierney, 2008). While this may be sufficient in detecting diabulimia or other eating disorders, it fails to address skills needed when discussing the issue with patients and their families. Without knowledge of techniques in responding and interacting with the patient, those diabetes care providers indicated their apprehension with even broaching the subject of

disordered eating behaviors. Being able to practice talking to patients in these situations, provide healthcare professionals the confidence to start and continue a conversation about eating disorders. It is important to note that as minors, doctor's appointments are attended by both the patient and their parent(s), so the doctor must be able to handle the situation with a patient and the family.

Due to the dangerous nature of the combination between type 1 diabetes and eating disorders, it is critical for healthcare providers to be suspicious of disordered eating behaviors. Screening at a young age is important, but the type of tool used is not as important. Rather, it is crucial that the healthcare provider address the issue and say something, simply to get a conversation started. One of the screening tools discussed will likely fit the needs of a clinic whether they want a more comprehensive screening or one which can be conducted under five minutes. Additionally, some of the screening tools require no payment for use, providing another benefit in using a screening tool.

It is extremely common for those with type 1 diabetes to have one or even many comorbid psychological disorders, so it is already important for psychologists to be educated in regard to type 1 diabetes and its specific challenges. Due to a life-threatening combination with type 1 diabetes, it is even more important when a case involves an eating disorder. Early intervention is extremely important for mental health care. After the screening process and a diabetes care provider notes a need for more assessment and intervention, a mental health care provider should be involved. The earlier they are involved the sooner the patient can begin to change thoughts and behaviors, often through cognitive behavioral therapy. The goal of cognitive behavioral therapy is to change patterns of thinking and ultimately their behaviors by changing the person's attitudes toward himself/herself and the targeted behaviors.

Unfortunately, inpatient facilities able to accommodate people with type 1 diabetes and eating disorders is seriously lacking. While many patients take advantage of outpatient programs rather than inpatient, it is still important for patients to have access to inpatient programs when needed. Currently, there are six facilities located in the United States. Only Utah, Colorado, Minnesota, Nevada, Oklahoma, and Virginia offer facilities equipped to handle the special needs of these individuals. The options for patients is extremely limited and many cannot move to the location of a facility, regardless of the need for treatment.

## **Conclusion**

Type 1 diabetes and eating disorders create a dangerous combination, especially among adolescents and young adults. The high amount of individuals with type 1 diabetes and an eating disorder compared to those without type 1 diabetes is alarming. Due to the relative newness of diabulimia with advancements made in technology and types of insulin, the problem must be addressed through increased awareness and education. Healthcare providers, both physical and mental, rely only on their intuition and experience. While those who have practiced for a long time can certainly use their experience to their advantage, it is not sufficient knowledge to help this vulnerable population. People with chronic illnesses are predisposed to a number of psychological disorders, thus health care professionals need to be suspicious and diligent when providing care.

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