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Disordered Diabetics: The "Highs and Lows" of Coping with Chronic Illness

Disordered Diabetics: The "Highs and Lows" of Coping with Chronic Illness

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Abstract:
Studies have found that females with type 1 diabetes are twice as likely as non-diagnosed peers to have mental illnesses such as depression or anxiety. Researchers have found that individuals with diabetes have greater difficulty when coping with external and internal stressors; often resulting in acquired negative coping methods such as suicide and eating disturbances. The relationship between mental health and diabetes also increases the probability of female patients acquiring eating disorders (particularly binge-eating disorder and bulimia) due to the nature of medical treatments, low self-esteem, and poor body image found in populations with diabetes. Additionally, intentional medication misuse is a common practice of females with diabetes due to the correlation between insulin therapy and weight gain; the resulting misuse can increase mortality rates and cause long-term physical health complications.

Diabetes, a chronic disease resulting from a lack of insulin-producing cells in the pancreas, was first recognized as an illness in ancient Egypt after the examination of individuals who suffered from frequent urination, unquenchable thirst, nausea, restlessness, and coinciding 'sweet' urine (Bilous & Donnelly, 2010; Goodfellow & Schmitt, 1994; Stahl-Pehe, Lange, Bachle, Castillo, Holl & Rosenbauer, 2014). For thousands of years, few practical theories as to what caused this disease or how one could go about treating it were available, resulting in high patient mortality rates (Feudtner, 2011; Goodfellow & Schmitt, 1994). Physicians later recognized that the 'sweetness' of urine from individuals with diabetes was due to an excess of sugar (glucose) within the body that resulted from the overwhelming of blood regulation and glucose absorption processes in the kidneys (Bilous & Donnelly, 2010).

In 1921, Canadian researchers investigated the biochemical features of diabetes and discovered the underlying relationship between blood glucose levels and insulin cell production (hormone that regulates glucose in the body) (Feudtner, 2011). Shortly thereafter, insulin injections and monitored eating became the preeminent treatments for diabetes management; associations between diabetes and health

consequences such as blindness and nerve damage were also realized at this time (Bilous & Donnelly, 2010; Goodfellow & Schmitt, 1994). In the years that followed, diabetes was categorized into two groups: type 1 (juvenile, insulin-dependent) and type 2 (adult-onset). Today, more than 26.3 million individuals are diagnosed with diabetes in the United States with a steady increase of 2.5 to 3 percent of diagnosed individuals with type 1 diabetes worldwide per year (Bilious & Donnelly, 2010). For the purposes of this literature review, type 1 diabetes (particularly in adolescent female patients) will be considered exclusively.

Just as the association between insulin and blood glucose levels was discovered nearly a hundred years ago, recent studies have found a significant correlation between diabetes and mental health disorders such as depression and anxiety (Hackworth, Hamilton, Moore, Northam, Bucalo & Cameron, 2013; Hasan, Mamun, Clavarino & Kairuz, 2013; Stahl-Pehe et al., 2014). Statistically, patients with diabetes of both genders have twice the likelihood of a diagnosis of depression and four times the rates of experienced depression than members of the general public (Esbitt, Batchelder, Tanenbaum, Shreck & Gonzalez, 2014; Hasan et al., 2013). Additionally, researchers

have suggested that individuals with early-onset type 1 diabetes are more likely to suffer from mental health issues than individuals diagnosed later in life (Stahl-Pehe et al., 2014). Although studies concerning mental health in diagnosed individuals differ on the causations for these numbers, many assume that stressors related to having a chronic illness act as the primary catalysts for these behaviors (Hasan et al., 2013; Grylli, Wagner, Hafferl-Gattermayer, Schober & Karwautz, 2005).

Particular stressors of diabetes relate to the required maintaining of strict daily regimens such as insulin injections, finger-prick glucose tests, and monitored food intake (Hackworth et al., 2013). Persons with diabetes also face the constant threat of severe long-term health complications due to health mismanagement resulting from hyperglycemia (extreme 'high' blood glucose) or hypoglycemia (extreme 'low' blood glucose). Additionally, patients with diabetes are highly susceptible to the influence of a medically induced preoccupation with numbers, physical health, and monitored food intake (Grylli et al., 2005; Hackworth et al., 2013; Powers, Richter, Ackard, Gerken, Meier & Criego 2012).

The combination of the previously mentioned disease-

related stressors and the increased likelihood of depressive traits in individuals with diabetes can cause impaired ego development and self-image complexity during adolescence, resulting in long-term low self-esteem, body dissatisfaction, and an increased desire for social acceptance (Grylli, Wagner, Berger, Sinnreich, Schober & Karwautz, 2010; Quick, McWilliams & Byrd-Bredbenner, 2012). General feelings of helplessness associated with the various treatment requirements and treatment consequences of type 1 diabetes (such as weight gain via insulin therapy) may also contribute to the desires for peer approval and bodily control within diagnosed adolescent populations (Grylli et al., 2010). Additionally, the desires for social acceptance and "fitting in" result in individuals (particularly females) with diabetes having twice the likelihood of attaining eating disorder characteristics and habits of medication misuse than non-diagnosed individuals Grylli et al., 2005; Grylli et al., 2010).

The following sections will expand on the correlation between mental health and physically manifested behaviors in type 1 diabetes. With the aforementioned findings from psychological and medical studies in consideration, evidence suggests that female adolescents with type 1 diabetes experience

higher rates of mental illness and distorted perceptions of body image than members of the general public, which creates an inability to cope effectively with external and internal pressures—often resulting in negative coping methods, increased frequency of disordered eating, and increased intentional medication misuse than the general public.

Coping Capabilities

Coping with the physical, social, and emotional demands of type 1 diabetes can be a formidable task for individuals diagnosed with the chronic illness before or during adolescence (Grylli et al., 2005; Stahl-Pehe et al., 2014). Studies have shown that while biomedical and technological advances have decreased the difficulty associated with diabetes care, medical advances have also increased psychological stressors and emotional distress in patients (Esbitt et al., 2014; Stahl-Pehe et al., 2014). The increased risk factor of acquiring mental health complications following a diagnosis of diabetes at a young age (and the resulting consequences thereof) is a significant concern in studies of the emotional and psychological health of individuals suffering from the chronic illness (Esbitt et al., 2014; Grylli et al., 2005; Hasan et al., 2013). Grylli, Wagner, Hafferl-Gattermayer, Schober, and

Karwautz (2005) theorized that the increased occurrence of stressors, both external and internal, placed on individuals with diabetes may be the primary causation behind mental health complications in diagnosed populations. Additionally, it has been suggested that the perception of being disabled and daily emphasis on having a chronic illness may also increase the risk of depression in adolescent females with diabetes (Hasan et al., 2013).

On average, an individual with diabetes is twice as likely to acquire depression as a non-diagnosed individual (Chung et al., 2014; Esbitt et al., 2014; Hasan et al., 2013). Depression alongside diabetes is often associated with self-management difficulties, health-related complications (glycemic control), and increased mortality rates, thus furthering the complications of balancing mental well-being and the physical demands of chronic illness (Esbitt et al., 2014; Grylli et al., 2005; Stahl-Pehe et al., 2014). As self-management declines, patients with diabetes face the probability of acquiring serious long-term health complications such as kidney disease, vision loss, vascular damage, amputation of limbs, increased mortality, and a reduced quality of life (Esbitt et al., 2014). Knowledge of these potential side effects of poor self-care could enhance the

effects of depression in populations with diabetes, often leading to harmful coping methods that act as compensatory behaviors (Chung et al., 2014; Grylli et al., 2005; Quick et al., 2012). Together, stressors and depression may lead to the decrease of coping capabilities within groups of individuals with diabetes; resulting in higher rates of suicide and eating disturbances.

Suicide

Hwang (2014) found that a diagnosis of insulin-dependent diabetes (type 1) created a marked increase in suicide ideation and suicide attempts among patients, with 20.7% of all patients measured (male and female) having reported suicidal tendencies following initial treatment for the disease. Individuals with diabetes often rate their health and quality of life as worse than the general public while also experiencing low self-efficacy and high hopelessness (Chung et al., 2014; Hasan et al., 2013). The association between depressive thoughts, health complications, and a perceived lower quality of life result in higher rates of suicide, suicidal thoughts, and suicide attempts among patients with diabetes than in populations of the general public (Balfe, Coyle, Smith, Sreenan, Conroy, & Brugha, 2013; Chung et al., 2014; Grylli et al., 2005; Hillege, Beale & McMaster; 2008). Additional studies

have also suggested that high blood glucose levels may also increase the prevalence of suicidal attitudes in treated patients as well (Chung et al., 2014).

Eating disturbances

Pressure associated with prescribed dietary and health regimens affect the process of self-regulation in individuals with diabetes (Grylli et al., 2010; Quick et al., 2012). If introduced during childhood and adolescence, these regimens can become catalysts for harmful thoughts and attitudes towards food consumption and body weight in adulthood (Quick et al., 2012). Quick, McWilliams, and Byrd-Bredbenner (2012) reported that individuals facing chronic illness (such as type 1 diabetes) were significantly more likely to acquire inappropriate compensatory behaviors to manage their weight such as excessive exercise and medication misuse as means of countering food intake. Additionally, patients facing these illnesses were more likely to place a greater emphasis on physical health, social diversion, structured meals, food quality, and self-comparison to peers (especially peers that are maternal or familial in nature). Evidence has also suggested that the increased emphasis on physical well-being and dietary restriction in diabetes treatments directly relates to the

acquiring of disordered eating behaviors and food perceptions later in life (binge eating, purging, restraint eating, strict dieting) (Balfe et al., 2013; Pollock-BarZiv & Davis, 2005: Quick et al., 2012).

Disordered Eating

Individuals with diabetes face 2.4 times the likelihood of obtaining eating disorders, with nearly 20% of all females with type 1 diabetes experiencing eating disorder symptomatology following their initial diagnosis (d'Emden et al., 2013; Grylli et al., 2005; Grylli et al., 2010; Hillege et al., 2008). Powers, Richter, Ackard, Critchley, Meier, and Criego (2013) suggest that the emphasis on food intake and body weight in diabetes paired with Western culture's obsession with thinness in various media outlets may further increase the risk factor for disordered eating in females with diabetes. Additionally, females with diabetes have been found to score higher on measurements of "negative body self" and "object depreciation" (devaluation of objects due to factors of anticipation and disappointment); potentially heightening negative perceptions of body image in accordance with increased susceptibility to outside influences (family, peers, media), perfectionism (esthetic appeal), and low self-esteem—further increasing the likelihood of eating

disorder behaviors in diagnosed females (Grylli et al., 2010; Philippi, Cardoso, Koritar & Alvarenga; 2013; Pollock-BarZiv et al., 2005; Powers et al., 2012). Additionally, this emphasis on perfectionism and susceptibility to outside sources may suggest that that the advice of medical professionals is likely to be misinterpreted by diabetic patients experiencing eating disorder tendencies and morphed into negative compensatory methods which contribute to disordered eating.

Treatments for diabetes, such as dietary restraint, weight management, and insulin injections may act as catalysts for eating disorders in diagnosed females, with the rigorous nature of treatments posing a particular problem for individuals with inclinations towards weight, shape and dietary concerns (Colton, Rodin, Olmsted & Daneman, 1999; d'Emden et al., 2013; Hillege et al., 2008; Philippi et al., 2013; Pollock-BarZiv, 2005). Furthermore, it has been found that patients with diabetes who were treated for eating disorders tend to respond more poorly to healing strategies than their peers due to the effects of long-term diabetes treatments (habitual/medical dieting and weight awareness) (Colton et al., 1999). Although several studies using eating disorder questionnaires found patients with diabetes to be "healthier" than the general public,

the extent to which these questionnaires potentially promote false positives, false negatives, and subjectivity concerning the interpretation of recorded responses detracts from the plausibility of their overall findings (Powers et al., 2012; Powers et al., 2013). Additionally, the role of mental health is often not considered in these studies due to the emphasis on the physical health of the patient—a common practice in endocrinology offices as well, which leads to the unintentional overlooking of eating disorder symptomatology in female patients.

Binge-Eating Disorder and Bulimia

The most common eating disorders found within groups of females with diabetes are binge-eating disorder and bulimia (Brown & Mehler, 2014; d'Emden et al., 2013; Grylli et al., 2005; Grylli et al., 2010; Philippi et al., 2013; Pollock-BarZiv, 2005). Binge-eating disorder occurs when individuals turn to (usually high calorie) food as coping or compensatory mechanism, excessively eating for a prolonged period of time without a sense of control during the episode. Concurrently, bulimia is typically defined as recurrent binge eating episodes followed by self-induced vomiting or use of dietetics (laxatives or purging methods) to prevent weight-gain and initiate weight-loss (Pollock-BarZiv, 2005; Takii, Uchigata,

Tokunaga, Amemiya, Kinukawa, Nozaki, Iwamoto & Kubo, 2008). Important to note is that while many patients with diabetes meet the criteria for binge eating and bulimia together, having binge eating tendencies without purging habits is more commonly found; making binge eating the most serious and prevalent eating disturbance in populations of individuals with diabetes (Takii, Komaki, Uchigata, Maeda, Omori & Kubo, 1999). Additionally, studies have found that approximately 60 to 80 percent of females with diabetes report to experiencing frequent binge eating episodes (Hillege et al., 2008). Recent studies have also found that bulimia occurs more frequently in populations with diabetes due to strict treatment regimens, heightened emphasis on food, and coinciding weight gain via insulin therapy (Blouin, Bushnik, Braaten & Blouin, 1989; d'Emden et al., 2013; Pollock-BarZiv, 2005; Quick et al., 2012). Although binge eating and bulimia both cause serious health complications, Takii, Uchigata, Tokunaga, Amemiya, Kinukawa, Nozaki, Iwamoto, and Kubo (2008) found that females with co-morbid diabetes and bulimia suffered from poorer metabolic control and greater long-term health complications than those with binge eating alone.

Diabulimia

The coexistence of an eating disorder and diabetes is often referred to as "diabulimia" (Philippi et al., 2013). However, unlike common eating disorders, diabulimia often is associated with a specific behaviors attributed to individuals with diabetes alongside typical purging or eating disturbances (Hillege et al., 2008; Philippi et al., 2013; Pollock-BarZiv et al., 2005). Although currently seen as a controversial term due to the emphasis on only one disorder (bulimia) out of the spectrum experienced by populations of individuals with diabetes, diabulimia highlights both the association of eating disorders alongside diabetes and the role that insulin therapy plays in the weight management processes of diagnosed females (Philippi et al., 2013). A defining trait of diabulimia is intentional medication misuse via the "skipping" of insulin injections (insulin omission) in order to lose weight gained by insulin therapy treatments (Hillege et al., 2008). The following section will further expand on the broad scope of associated consequences concerning insulin omission in female populations with diabetes.

Intentional Medication Misuse

In order to combat health complications associated with

diabetes (the lack of insulin-producing cells in the pancreas), patients use artificial insulin injections to regulate the glucose levels in their bodies to prevent short-term illness and long-term health complications (d'Emden et al., 2013; Bilous & Donnelly, 2010). In addition to glucose regulation, insulin injections can also cause significant weight gain that results in larger body mass index measurements (BMI) (d'Emden et al., 2013; Grylli et al., 2005; Philippi et al., 2013; Takii et al., 1999). Insulin treatments are believed to increase the risk of eating disorders in diagnosed adolescent female populations due to the cycle of weight loss at disease onset, weight gain following insulin dosage increases as the patient ages, and the trend towards higher BMI measurements at key stages of adolescence as a result of insulin therapy (d'Emden et al., 2013; Hillege et al., 2008). Hillege, Beale and McMaster (2008) theorized that weight gain resulting from insulin therapy may also create an alternative cycle of self-control, binge eating, and purging due to the overwhelming societal standard for peer-referenced bodily appearance; this causes females with diabetes to risk eating disorder behaviors despite having a chronic (and potentially fatal) medical condition. As a result, many females with diabetes intentionally "omit" or manipulate their insulin

treatments in hopes of preventing weight gain and losing "excess" weight (Hillege et al., 2008).

Insulin Omission

Due to the association between insulin therapy and weight gain, many females with diabetes have been found to omit insulin injections in favor of maintaining a lower weight—often in addition to other dietary or purging methods (Hillege et al., 2008; Philippi et al., 2013). Additionally, insulin omission is seen as a simple, readily available, and private avenue to weight loss by diagnosed individuals who may not be struggling with body image or increased BMI concerns as well (Colton et al., 1999; Hillege et al., 2008). By restricting insulin, diagnosed individuals allow glucose to build up in the bloodstream causing hyperglycemia (high blood glucose) that results in glucose (and calorie) excretion via urination and eventual weight loss (Philippi et al., 2013). Consequently, insulin omission not only lowers weight, but increases the chances of eating disorders by nine times, creates a 3.2 times higher mortality risk than that within the general public, and causes severe long-term health consequences resulting from self-inflicted ketoacidosis (buildup of toxic acids [ketones] in the bloodstream, usually controlled by insulin hormones) (Colton

et al., 1999; Philippi et al., 2013; Pollock-BarZiv et al., 2005).

Health Consequences of Insulin Omission

Clinical eating disorders, even in mild forms, have serious consequences when combined with type 1 diabetes; however, early-onset micro-vascular and macro-vascular damage are primary concerns for clinicians treating diagnosed individuals who choose to omit insulin or perform other purging methods (d'Emden et al., 2013). Potential long-term consequences of insulin omission (or misuse) include heart, vascular, and kidney disease; retinopathy, and neuropathy (Takii et al., 2008). The avoidance of acquiring diabetic retinopathy (presence of micro-aneurysms or dot hemorrhages in the eye that result in blindness) and diabetic nephropathy (presence of micro-albuminuria in the kidneys) resulting from ketoacidosis are often given the greatest concern due to the long-term, irreversible consequences of each (Pinhas-Hamiel, Hamiel, Greenfield, Boyko, Graph-Barel, Rachmiel, Lerner-Geva & Reichman, 2013; Powers et al., 2012; Takii et al., 2008).

Conclusion

The previously examined studies have found that individuals (particularly adolescent females) with type 1 diabetes not only experience twice the likelihood of depression

and general mental illness; but an increased likelihood of negative body perceptions, suicidal thoughts and eating disorder behaviors than the general public. The frequent co-morbidity of diabetes and mental health complications create external and internal stressors for diagnosed individuals, often resulting in negative coping mechanisms such as eating disturbances and suicidal inclinations. Individuals with diabetes are also found to have significantly lower perceptions body image; resulting in low self-esteem, low self-regulation, and low self-efficacy. From this, adolescent females with diabetes often adopt detrimental habits, behaviors, and thoughts such as suicidal attitudes and eating disturbances.

The nature of treatments for diabetes also creates a higher susceptibility concerning the adoption of eating disorders and medication misuse. Additionally, adolescent females with diabetes face higher rates of mortality and long-term health complications as a result of insulin omission and manipulation. Thus, female adolescents diagnosed with diabetes experience higher rates of mental illness and distorted perceptions of body image, creating an inability to cope effectively with external and internal pressures resulting in negative coping methods, increased frequency of disordered

eating, and increased intentional medication misuse than the general public.

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