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Cognitive–Behavioral Therapy and Hypnotic Relaxation to Treat Sleep Problems in an Adolescent With Diabetes

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Abstract

Inadequate sleep among adolescents frequently contributes to obesity and reduced academic performance, along with symptoms of anxiety, depression, fatigue, and attention deficits. The etiological bases of sleep quality has been associated with both stress and sleep habits. These problems tend to be especially important for adolescents with diabetes as the effects of poor sleep complicate health outcomes. This case example concerns a 14-year-old adolescent girl with a history of type I diabetes and stress-related sleep difficulties. Treatment included cognitive–behavioral methods and hypnotic relaxation therapy. Results of this case example and other controlled research suggest that hypnotic relaxation therapy is well accepted, results in good compliance, and serves as a useful adjunctive to cognitive–behavioral intervention for sleep problems.

Keywords

diabetes; sleep disorders; hypnosis; cognitive-behavior therapy; eating

Diabetes mellitus is a cluster of metabolic disorders attributable to glucose dysregulation. The prevalence of diabetes is approximately 1 of every 357 youth SEARCH for Diabetes, 2006), with type 1 diabetes affecting 2.28 cases per 1000 youth. In addition to the public health burden of diabetes in children and adolescents, research has found sleep disturbances in individuals at risk for (e.g., Snell, Adam, & Duncan, 2007) or suffering from diabetes (e.g., Perfect, Elkins, Lahroud, & Posey, 2010; Pillar et al., 2003). These sleep disturbances frequently have biological and psychological consequences (e.g., Perfect et al., 2010; Pillar et al., 2003).

Despite these research findings, there have been no treatment methods advanced specifically for sleep disorders in this population. Psychotherapists treating clients suffering from diabetes and sleep disturbances will need to consider interventions that have been found to be effective in individuals without diabetes. To that end, in this article we briefly review the research on sleep in adolescents, sleep in individuals at risk for or diagnosed with diabetes, and behavioral interventions targeting sleep-related problems. We illustrate with a case of an adolescent diagnosed with type 1 diabetes who sought treatment for sleep disturbances primarily resulting from stress, which in turn was complicating her diabetes management.

Sleep, Adolescents, and Diabetes

The chronobiological changes during adolescence result in a phase preference for later sleep times and later awakening times. Nonetheless, adolescents still require an average of 8.5 hours of sleep per night, an amount that has been increasingly more difficult to achieve (O'Brien & Mindell, 2005; Wolfson & Carskadon, 1998). However, because of school start times and other obligations, they often do not have the opportunity to remain in bed longer in the morning even though they went to bed later. Further, adolescents may try to make up the sleep time on the weekend. This longer sleep duration and later awakening on nonschool days has been linked with poorer school performance and other psychological problems (Wolfson & Carskadon, 1998).

Most studies with adolescents have focused on the psychosocial consequences of inadequate sleep. Years of research have supported negative outcomes of poor sleep, such as depression, reduced capacity to manage stress, or diminished academic performance (e.g., O'Brien & Mindell, 2005; Wolfson & Carskadon, 1998). Sleep time and quality may also coincide with several lifestyle factors, such as poor sleep habits, risky behaviors, sedentary behavior, or overeating (O'Brien & Mindell, 2005; Seicean et al., 2007).

More recently, there have been documented physiological consequences of sleep disturbances. Based primarily on studies with adults, it has been postulated that sleep loss contributes to imbalances in metabolic hormones (glucose, insulin, cholesterol) and appetite hormones (e.g., leptin, ghrelin; Knutson, 2007). Although findings have been equivocal, there is considerable evidence to support the concept that inadequate sleep is a contributing factor to the obesity epidemic in youth (e.g., Seicean et al., 2007; Snell et al., 2007). For example, a longitudinal study revealed that shorter sleep duration significantly predicted overweight status 5 years later in children (Snell et al., 2007).

Almost all studies documenting associations between sleep and diabetes have focused on adults. Thus, little is known about the impact that glucose dysregulation exerts on sleep or the role that sleep plays in glucose control in adolescents. Nonetheless, nighttime hyper- or hypoglycemia is a well-documented problem in youth with diabetes (Matyka, Crawford, Wiggs, Dunger, & Stores, 2000). One small study using actigraphy (a wrist-size device that records movement to estimate sleep–wake activity), which included both adolescents and adults suffering from diabetes, found that total sleep time to be 6.5 hours. Eighty percent of the participants slept less than the recommended number of hours for their age to achieve optimal functioning. Further, nearly 70% of the participants reported poor sleep quality as indicated by the Pittsburgh Sleep Quality Index (PSQI; Perfect et al., 2010).

Two studies have utilized polysomnography (PSG; diagnostic test to obtain sleep-related breathing and staging parameters) in children with type 1 diabetes. One study found that such children exhibited more sleep disturbances as measured by home-based PSG compared to matched nondiabetic controls, but did not find that hypoglycemia affected sleep (Matyka et al., 2000). The other study that used continuous glucose monitoring and lab-based PSG in 15 children with type 1 diabetes found that severe hypoglycemia was associated with deepening of sleep (so participants did not awaken to respond to the drop in glucose) and rapid changes in glucose triggered arousals (Pillar et al., 2003).

Behavioral Treatments for Sleep Disturbances

The rigor of research focused on nonpharmacological approaches to treat sleep disturbances in adolescents lags behind that of adults. However, there are several behavioral treatments that have reached the level of practice guidelines to treat primary insomnia in nonmedical adult populations. For instance, cognitive–behavioral therapy (CBT), which combines

strategies to reduce intrusive thoughts, physiological arousal or tension, and poor sleep hygiene, has been deemed a “well-established treatment” (Morin et al., 2006). Multicomponent approaches and stimulus control (SC), which targets sleep-incompatible behaviors and promotes a consistent sleep-wake schedule, have also been considered the most efficacious for producing clinically meaningful changes in multiple sleep parameters (Bootzin, Smith, Franzen, & Shapiro, 2010; Bootzin & Stevens, 2005; Morin et al., 2006). One study demonstrated the promise of a combination treatment—SC, bright light therapy, sleep hygiene education, cognitive restructuring, sleep hygiene education, and mindfulness-based stress reduction—in improving sleep among adolescents who had completed a substance abuse treatment program (Bootzin & Stevens, 2005).

One other research-supported treatment to reduce arousal and promote relaxation is clinical hypnosis (Graci & Hardie, 2007). In the treatment of insomnia, patients are taught self-hypnosis as a way to relax and to encourage onset of sleep and sleeping longer while in bed. The addition of a hypnotic relaxation therapy to CBT may be beneficial to some clients. For example, a clinical study (Elkins, 1997) reported on 10 clients who received a combination of sleep hygiene instruction, stimulus control instructions, and guidance in self-hypnosis. Clients reported highest compliance with instructions to practice and use self-hypnosis; they also reported that hypnotic relaxation therapy proved helpful. Stimulus control instructions were given, but most of the patients in this clinical study reported that they found it to be inconvenient. However, self-hypnosis was well accepted, and most clients reported using this method with benefit. This is not surprising because most patients experience a hypnotic induction as pleasant, relaxing, and easy to achieve.

In clinical practice, we have found integrating CBT with hypnotherapy to be advantageous in that together they seem to enhance patient compliance and treatment outcomes for some patients. This finding is consistent with other clinical reports that hypnosis can be integrated with interventions to help with diabetes management. For instance, one small study implemented hypnosis aimed at improving compliance in seven youth diagnosed with type 1 diabetes (Ratner, Gross, Casas, & Castells, 1990).

In addition, a chart review revealed that the majority of children and adolescents experienced a resolution of nonrespiratory sleep problems following participation in hypnosis (Anbar & Slothower, 2006). Sixty-three of the 70 children diagnosed with insomnia due to sleep-onset latency (SOL) problems self-reported that their SOL significantly decreased after participating in treatment. Among the 21 children who reported problems with waking in the middle of the night, over one third reported significant improvement and over one half reported no longer experiencing nighttime awakenings. Most notable was that the majority of children were seen for three or fewer sessions (Anbar & Slothower, 2006). Reviews of hypnotherapy for sleep disorders (e.g., Ng & Lee, 2008) generally conclude that it should be part of a treatment package that includes CBT.

Case Illustration

Presenting Problem and Client Description

“Christa” is a 14-year-old Caucasian adolescent girl with a history of type 1 diabetes, first diagnosed when she was 5 years old. Her body mass index was in the 34th percentile and her pretreatment hemoglobin A1C was 8.9% (normal range is below 7%). She received daily insulin via a pump. At the start of treatment, her sugars were running in the 300s with occasional nocturnal hypoglycemia. She was a nonsmoker and did not drink alcohol. She reported that her glucose was higher during times of stress or at least could be triggered by stress. Medical records indicated that about a month before she came for treatment, she weighed 104 pounds, down 7 pounds from 4 months earlier.

Christa lived with both biological parents. Her sister moved out of state for military training, and her paternal grandfather had died during the previous year. She stated that she has to “be the best and greatest in everything,” otherwise she feels inadequate. Christa experienced stress in school work as well as signs of sadness because of her sister and grandfather.

Her sleep complaints included trouble falling asleep at night and staying asleep. When it is time for bed, Christa kept thinking about what she had not accomplished and about missing her family members. She described multiple awakenings because of concerns regarding her blood sugars dropping overnight (hypoglycemia). Her physicians had instructed her or her parents to test once per night, but Christa woke up being concerned about her levels multiple times. She sometimes checked and this helped, but sometimes just dwelled on it. She then had difficulty falling back asleep.

Christa did not appear concerned over eating, but did acknowledge that her appetite had reduced in recent months. She routinely participated in basketball and other physical activities. She attributed her weight loss to eating less and participating in athletics. She also reported occasional embarrassment about having to monitor what she ate in front of her friends. Other symptoms when stressed were occasional crying, stomach distress, and nausea. However, Christa denied long periods of sadness and suicidal ideation. She reported adequate self-esteem.

Baseline data included a one-week sleep diary, the Pittsburgh Sleep Quality Index (Buysee, Reynolds, Monk, Berman, & Kupfer, 1989), and the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). The diary indicated that Christa slept an average of 6.8 hours, which is less than the recommended 8.5 hours for adolescents. Her sleep efficiency (number of minutes reported sleeping divided by the total number of minutes reported in bed) was 66.6%. Average sleep onset latency (the time it takes to fall asleep; SOL) was 31.0 minutes and wake after sleep onset (WASO) was 83.6 minutes. Her average bedtime during the summer when she started treatment was 1:15 a.m. Her PSQI score was 8, which indicates disturbed sleep. Her Perceived Stress Scale score was 26 (out of a possible 40). Although there are no clinical cutoffs nor means reported for adolescents, higher scores mean more stress.

Case Formulation

Christa was facing three major life changes: her grandfather dying, her sister moving away, and her transition to high school following the summer break. Clinically, Christa did not meet diagnostic criteria for a mental health disorder other than probably an adjustment disorder. However, it was evident that external stressors were contributing to weight loss, interfering with her diabetes management, and significantly disturbing her sleep cycle. The fact that she was struggling to adjust challenged her perfectionist tendencies, further contributing to her stress. Her primary coping strategy appeared to be somatic in nature. She had increased arousal at night, which interfered with her ability to fall and remain asleep. Similar to other adolescents, her bedtime was quite late. Christa’s diary indicated that she was somewhat phase delayed and had irregular sleep habits in that at times she would go to bed at 11 p.m. and other times she would go to sleep at 3:00 a.m. Also, environmental conditions (e.g., television in room) appeared to interfere with her falling asleep, whereas rumination about hypoglycemic events prolonged awakenings.

Course of Treatment

The multicomponent treatment targeted insomnia symptoms as well as phase delay. Sleep hygiene education provided information related to health behaviors (alcohol/smoking, physical activity, eating, stress management) and environmental conditions (e.g.,

temperature, noise) that might facilitate or interfere with sleep. Stimulus control (SC) focused on promoting consistency in sleep and wake patterns by teaching the adolescent to associate the bed and bedroom as context cues for sleeping and not for other activities (watching TV, reading, listening to the radio). In addition, Christa was instructed to get out of bed and do a quiet activity when becoming irritated about not being able to fall back asleep. Hypnosis emphasized focused attention, symptom control, and guided imagery for relaxation. Finally, cognitive restructuring identified any distortions that contribute to sleep problems.

Although sleep restriction is often part of a multimodal treatment when targeting sleep problems, it was not used in this case because adolescents often give themselves less opportunity to sleep than needed. Therefore, Christa was encouraged to increase total sleep time, which included going to bed earlier (consistently) and if possible getting up a little later, but at the same time each day. Further, because of the late average bedtime, she would be instructed to gradually change her bedtime.

To achieve these goals, there were four planned face-to-face sessions with phone calls in between. To facilitate maintenance, the therapist and family agreed that the first two sessions would be one week apart, there would be 2 weeks between sessions 2 and 3 (with an intersession phone call) and 3 weeks between sessions 3 and 4 (with an intersession phone call).

Session 1—During the initial consultation, Christa's history of diabetes was reviewed and the use of hypnosis was discussed. Hypnosis was discussed as a mind-body therapy that involves relaxation and mental imagery. We discussed a hypnotic induction involving suggestions for deep relaxation and mental imagery associated with relaxation. The therapist reflected on Christa's feelings and used empathic statements to establish rapport. Open-ended questions were used to help elicit a discussion about stressors, particularly ones that interfered with Christa's sleep. Christa talked about the loss of her paternal grandfather, her sister moving away, concerns about the transition to high school, worries about forgetting to take insulin, and fears that something bad will happen to her parents. She reported that when she woke up at night, she would be most concerned with whether or not her blood sugars were too low. Christa reported that on a scale from 1 to 10, her mood had been a 5.

The therapist engaged Christa in a discussion about factors that interfered or facilitated sleep. They collaboratively identified activities in her bed that might be too stimulating, such as television viewing and reading. Although she indicated that she wanted to continue to watch TV, Christa agreed to try sitting at her desk to do "work" rather than on her bed. She indicated that this would be more of a challenge when she went back to school. The exception to the stimulus control was that her self-hypnosis could be done during the day (to cope with stress) or at night to assist her in falling asleep.

The therapist also provided the parents with some education about the sleep requirements for adolescents and encouraged them to change their night time routine to allow for more opportunity for Christa to sleep. Since it was the summer, Christa could sleep in later, but that practice would disrupt her circadian pattern once school started back up. Therefore, the therapist advised Christa to attempt to go to sleep 15 minutes earlier each night.

After a discussion of stressors, stimulus control, and sleep hygiene, a hypnotic induction was completed. Christa was asked to sit in a recliner and focus her attention on a spot on the wall. Suggestions were given that she could become more relaxed and that she could imagine a wave of relaxation spreading from her head down to her feet. She was instructed to let her eyelids close as she became aware of the feelings of relaxation and was able to let

go of tension. It was then suggested that she could deepen relaxation and hypnosis by imagining walking down steps with a plush red carpet and with each step getting deeper relaxed. The hypnosis session then included suggestions to imagine and feel the sensations associated with “resting on a recliner near a lake on a warm summer day... trees reflected on the surface of the water...” There was also the suggestion that she imagine herself in an overstuffed chair near a fireplace and that as she sits, she sink down into the cushions, going deeper into a state of relaxation.

Christa was able to imagine (and even feel) the warmth of the sun and the breeze from the cool lake water. She was asked if she could identify any particular personal memory or imagery of being relaxed that could be used in hypnosis. She described a garden tub in her parent’s bathroom. She thought it would be helpful to imagine sitting in a bubble bath of warm water, smelling the strawberry essence of the bubble bath formula.

Christa was asked to begin practice of self-hypnosis on a daily basis and to monitor how deeply relaxed she was during each time. She was asked to note any such times so that any stresses could be discussed at later sessions. Christa was provided with an audiotape and she was instructed in daily practice. As part of her medical regime, she was required to do at least four finger sticks daily. She was also asked to provide a copy of her glucose log.

Session 2—At the beginning of the second session, the therapist checked in with Christa about her diabetic health, perceived stress over the past week, and frequency of listening to the hypnotic induction. Christa reported that she listened to the recording on three occasions and that it helped her “fall asleep at night in bed.” Her downloaded glucose meter data indicated that, although she had some higher sugars in the mid-200s, there were also several numbers in the mid-100s. Her lowest reading was 136. There were no readings in the 300s. Christa reported that on a scale from 1 to 10, her mood had been a 7. Because she still reported difficulty staying asleep and worried about her blood sugars and whether she correctly adjusted the insulin, it was decided that she would check with her mother about her insulin before she went to bed. Then, it was planned that per her physician’s recommendation she (or her mother) would take one reading midway through her nighttime. There was also a discussion about symptoms of low blood sugars. If these concerns were keeping her awake, she agreed to take a reading rather than continue to ruminate. Christa reported that she went to bed around 12:45 a.m. each night, about 30 minutes sooner than the week before. She reported watching less TV before falling asleep and sometimes practicing self-hypnosis instead. The therapist encouraged her to keep trying to go to bed a little earlier, in 15-minute increments.

A hypnotic induction was also done during this session. The same framework was used, but this time, the suggestions included Christa walking up the stairs in her house toward her parent’s bedroom. Imagery included the garden tub in her parent’s room with the strawberry fragrance of the bubbles and sounds of the running water filling the tub. It was suggested that she feel a floating sensation in the water and to feel the warmth of the water.

At the end of the session, Christa and her mom were given instructions in self-hypnosis and encouraged to practice hypnosis some of the time without using the audiotape. The therapist and parent agreed to meet in 2 weeks, but the therapist would call at a prearranged time to check in with Christa.

Phone call—Because there would be 2 weeks in between sessions, a phone call was arranged to check in with Christa about her stress and to encourage her to practice self-hypnosis. Christa reported that on a scale from 1 to 10, her mood had been a 7. She noted

that she had used the tape three times to fall asleep and she engaged in self-hypnosis without the tape on two occasions during the daytime.

Session 3—Both Christa and her mother reported an improved mood. Christa rated her mood a 9 on the 10-point scale. She reported that she went to bed between 12:00 and 12:30, with less variability than previously reported. She believed that she was taking less time to fall asleep, but was still having difficulties staying asleep. She did perceive that she could fall asleep faster when she did wake up. The possibility of practicing self-hypnosis to help her fall back asleep was raised. The therapist reminded her that if she is getting frustrated about not falling back asleep, she should go to another room and do a quiet activity. Christa acknowledged that she had not been doing that, but that she had not been worrying about her blood sugars, particularly because there had been several readings that were within the target range (10 below 140, 4 of which were between 100 and 110). To her knowledge, she also had not had any hypoglycemic events. Once again, a hypnotic induction was completed. Prior to the induction, Christa added some details about the bathroom with the garden tub and the path leading to the room. The therapist incorporated this imagery into the hypnosis.

In reviewing instructions on self-hypnosis, the emphasis was on not using the tape so that Christa could use her own imagery to facilitate a relaxed state. Although Christa felt that her sleep had improved and her stress reduced, her biggest concern was the anticipation of starting high school in a few weeks. Therefore, she decided to come back in 3 weeks (the week that school started), but we would hold a phone call check in 2 weeks. If she continued to do well, she would discontinue treatment. In addition, she was asked to keep a sleep diary for 2 weeks prior to coming in for the next session.

To verify her verbal reports, Christa was readministered the PSQI and PSS. Her PSQI score was 3, which was below the score considered to be indicative of sleep disturbances. Her PSS was 13 (of a possible 40). Both of these had reduced considerably. They would be administered after the 3-week break as well.

Phone call—The purpose of this phone call was to reinforce the practice of self-hypnosis, identify any barriers to this practice, and address any new or problematic stressors. Christa reported that her mood was an 8 on a 10-point scale and her main stressor was school starting back up. Christa indicated that she had started filling out the 2-week sleep diary. She reported that she had generally been going to bed around 11:45 p.m., though there was some variability between 11:00 p.m. to 12:30 a.m. She reported that it had been taking her about 20 minutes to fall asleep, but she did have frequent awakenings, though she perceived the total time awake to be shorter.

Session 4—The session started by reviewing the sleep diary (see Outcome and Prognosis subsection). As she had reported in the phone conversation, it appeared that her SOL and to a lesser extent her WASO had decreased. Overall, Christa attributed improvements in her sleep habits to limiting the amount of television she watched in her room, practicing self-hypnosis, and focusing less on fears related to hypoglycemia.

Although Christa was a healthy weight, because sleep appears to affect eating habits or at least appetite hormones, the therapist inquired about Christa's eating habits. This was also important to address because Christa had lost 7 lbs prior to starting therapy. Christa denied any problems with eating. She was unaware of any connection to her changing sleep patterns. She did acknowledge some embarrassment with calculating the carbohydrates of various foods and adjusting her insulin accordingly in her pump. She also felt restricted by what she could eat to avoid additional worries. She did not perceive that her eating and

sleeping behaviors were related nor did she believe that she ate differently depending on the quality or quantity of her sleep.

The remainder of the session included a hypnotic induction consistent with her preferences for imagery identified in the previous sessions. She was encouraged to continue to practice self-hypnosis and follow the other recommendations. Christa continued to report she was feeling better in regard to both her sleep and her emotions.

Outcome and Prognosis

Christa completed a sleep diary for 2 weeks. The diary indicated that she slept an average of 7.5 hours, which was still less than the recommended 8.5 hours for adolescents, but had increased from less than 7 hours. Her sleep efficiency had risen from 66.6% to 84.6%. Average sleep onset latency was 16 minutes and wake after sleep onset was 32 minutes. Her diary indicated that she was going to bed about an hour and a half earlier than when she entered treatment, but still too late to provide enough opportunity for school days. Thus, there was also variability on the weekend awakening time (appeared more like the summer) compared to her weekday awakening times. Her PSQI score remained at 3 since the last evaluation. The main sleep-related problem was that Christa was still going to bed around midnight.

Christa's perceived stress score was 4, which was lower than both baseline and following the third face-to-face meeting. Because it had only been 2 months, she had not yet had a follow-up appointment to get blood work for her hemoglobin A1C; however, the last downloaded meter readings were 180 or lower for two consecutive weeks.

Christa's posttreatment data as well as her verbal reports indicated that Christa had made notable improvements. The therapist was still concerned with the timing of sleep initiation and the risk of a phase delay, but the adolescent (and parent) decided that treatment goals had been met as evidenced by a reduction in worries that interfered with sleep, a faster sleep onset, reduction in awakening duration, significantly lower stress, better sleep quality, longer sleep duration, and improved glucose readings.

Clinical Practices and Summary

Diabetes is the one of the most common disorders in children and adolescents. There is strong evidence that stress and sleep impact diabetic health, both on a psychological as well as a physiological level. Cognitive-behavioral treatments have demonstrated considerable benefits for both stress and sleep disorders. Hypnosis has also been used to treat sleep difficulties; however, the data are typically reported in the context of a small, uncontrolled study. Nonetheless, hypnosis is a form of relaxation therapy, which is often a major component of multimodal interventions.

The case of Christa demonstrates the potential benefit of integrating hypnosis with other treatments for adolescents suffering from diabetes and sleep disturbances. Hypnosis involves suggestions for relaxation as well as experiencing a state of absorption, increased receptivity to suggestion, and goal-directed hypnotic suggestion intervention as was done in this case study. Self-hypnosis is readily accepted and eagerly practiced by most adolescents on an as-needed basis. Self-hypnosis can be a life-long skill use whenever needed.

Although Christa began shifting her average bedtime, another problem that was not resolved during treatment and seemed to be dismissed by the adolescent and mother is the risk of a phase delay. Most adolescents prefer going to bed later. In the case of Christa, she was going to bed close to 1:30 a.m. at the start of treatment and then right before midnight at the end of

treatment. She gradually went to bed earlier, though the biggest change was when school started. Thus, parental controls and monitoring may have come into play. Her total sleep time increased, though still not the level of the amount adolescents biologically need, she had to wake up slightly earlier on the weekdays and slept later on the weekends. Nonetheless, her PSQI score indicated she was feeling refreshed in the morning and less sleepy during the day.

One method we did not try was bright-light therapy (Bootzin et al., 2010). This treatment consists of exposing the client to bright light in the morning to help reestablish reset the individual's intrinsic clock. It seems particularly useful for adolescents who have difficulty going to bed at a "normal" hours and waking up in the morning.

There are a number of important considerations in successfully utilizing hypnotic relaxation as part of a multimodal treatment for youth with diabetes and sleep disorders. First, the clinician must have adequate training in hypnosis. Second, some adolescents may resist treatments involving hypnosis because of preconceived misconceptions about it. Thus, the therapist may need to provide additional information to dispel myths and give the opportunity for the adolescents to ask questions. We have found that most adolescents are reassured when they experience hypnosis and appreciate the opportunity to master their own behavior and control relaxation on their own. Third, not all clients prove amenable to hypnosis. Clients low in hypnotizability are not as responsive to hypnotic suggestions compared to those with higher levels of hypnotizability. Thus, clinicians should discuss with clients whether they want to try hypnosis or other alternatives. Fourth, hypnosis may be contraindicated in patients suffering from some mental health conditions, such as borderline personality disorder, schizophrenia, or posttraumatic stress disorder (Elkins, Ruud, & Perfect, 2008).

If a diabetic adolescent is reporting symptoms of sleepiness and disrupted sleep, endocrinologists and clinicians should consider the possibility of sleep-disordered breathing (SDB). There are universal recommendations for anyone with type 2 diabetes to be screened for SDB, but there is less information about whether sleep-disordered breathing is a concern in youth with type 1 diabetes. Thus, if there is evidence of SDB, a referral to a sleep disorder center for assessment and treatment should be made.

Adolescents and young adults who have been diagnosed with a chronic medical condition, such as diabetes, are particularly vulnerable to the effects of stress (Perfect et al., 2010). Although Christa's glucose regulation was not a direct goal of treatment, its improvement may have been attributable to, at least in part, a reduction in her stress and improvement in her sleep.

In sum, this case study provides clinical support that hypnosis is a feasible and potentially beneficial adjunct for the relaxation component of multimodal treatments. Adolescents suffering from diabetes, in particular, find it useful in coping with the multiple stressors associated with their disease management.

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