

Development of a Group Intervention for Teens With Type 1 Diabetes

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Adolescents with Type 1 diabetes (DM1) are at significant risk for depression compared to their non-diabetic counterparts and frequently demonstrate poor glycemic control. Comorbid depression may further exacerbate inadequate metabolic control by creating emotional barriers to effective adherence. Caregiver response to the diagnosis and management of DM1 also has implications for diabetic teens' psychological and physical health. This article describes the development and implementation of a group intervention for adolescents with DM1 and a parallel caregiver support group. The group intervention is designed to improve psychosocial functioning and medical adherence in teen participants and to reduce diabetes-specific stress in caregivers.

Keywords: *adolescent; depression; diabetes; group intervention; parental adjustment*

Type 1 diabetes mellitus (DM1) is a metabolic condition in which the body's immune system destroys pancreatic cells responsible for producing insulin (Centers for Disease Control and Prevention [CDC], 2008). Population-based estimates suggest that approximately 15,000 youth are newly diagnosed with DM1 each year in the United States (Dabelea et al., 2007). Individuals with DM1 must participate

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in insulin therapy to maintain glycemic control, and effective management of diabetic symptoms includes regular checks of blood-glucose levels, monitoring of diet, and a consistent exercise routine (CDC, 2008). Diabetes management regimens are complex and adherence may be especially difficult for adolescents as puberty brings not only hormonal and metabolic changes that influence insulin sensitivity, but also psychosocial changes involving a growing need for autonomy from parental figures, increased exposure to peer pressure, and a tendency towards poorer lifestyle choices (Tfayli & Arslanian, 2007). Indeed, adolescents demonstrate reduced glycemic control and poor overall medical adherence compared to both older and younger diabetic counterparts (Hoffman, 2002; Johnson et al., 1992; Kovacs, Goldston, Obrosky, & Iyengar, 1992; Unger, 2007).

In addition to struggles with metabolic control, adolescents coping with diabetes may experience deterioration in mental health functioning when faced with psychosocial stressors. Youth with DM1 exhibit poor psychological adjustment at the time of diagnosis (Northam, Anderson, Adler, Werther, & Warne, 1996) and up to 2 years post-diagnosis (Grey, Cameron, Lipman, & Thurber, 1995), with depression being particularly common among diabetic youth (Kanner, Hamrin, & Grey, 2003; Kokkonen & Kokkonen, 1995; Kovacs, Goldston, Obrosky, & Bonar, 1997; Kovacs, Obrosky, Goldston, & Drash, 1997). A review of the literature on the comorbidity between DM1 and depression indicates that 20% of youth with DM1 struggle with depressive symptoms compared to only 7% of non-diabetic youth (Grey, Whittemore, & Tamborlane, 2002). Furthermore, depressive episodes associated with DM1 are of longer duration, include more severe symptoms, and recur at higher rates than those in matched control groups (Kokkonen & Kokkonen, 1995; Kovacs et al., 1997). As depression and poor glycemic control frequently co-occur in Type 1 diabetic patients (Lustman et al., 2000; Van Tilburg et al., 2001), it may be that depressive symptoms create emotional barriers that interfere with optimal adherence among adolescents. Studies show that higher rates of depression continue into adulthood (Gavard, Lustman, & Clouse, 1993; Goldney, Phillips, Fisher, & Wilson, 2004; Zhao, Chen, Lin, & Sigal, 2006), thus potentially leading to extended periods of inadequate diabetes management.

Poor diabetes management in teens with DM1 is also associated with diabetes-specific family conflict, and may be attributed to teens becoming discouraged about their diabetes care when criticized by caregivers (Sander, Odell, & Hood, 2010). Studies have found that adolescents perceive themselves as more competent and independent than their parents perceive them to be, and such discrepancies are associated with poorer diabetes outcomes for teens as well as poorer emotional adjustment for parents (Butner et al., 2009). A warm and accepting

parent-adolescent relationship is associated with effective diabetes management (Berg et al., 2008) and points to the importance of positive communication and collaboration between diabetic teens and their caregivers. In fact, a teamwork approach with diabetes tasks has been positively associated with adherence and metabolic control (Ellis et al., 2007). These findings highlight the significance of promoting positive relationships between adolescents and their caregivers, not only to improve psychological adjustment but also to enhance diabetes outcomes.

Systematic reviews of the literature demonstrate that psychosocial and behavioral interventions are generally effective at improving medical adherence and glycemic control in youth with diabetes (Delamater et al., 2001; Hampson et al., 2000), with both family-based and peer-group interventions showing positive outcomes (B. J. Anderson, Wolf, Burkhart, Cornell, & Bacon, 1989; Satin, La Greca, Zigo, & Skyler, 1989; Wysocki, Greco, Harris, Bubb, & White, 2001). Diabetes self-management programs emphasizing patient education, health-promoting behaviors, and medical adherence are also associated with improved glycemic control (Hood, Rohan, Peterson, & Drotar, 2010; Warsi, Wang, LaValley, Avorn, & Solomon, 2004). While stress management training has not yet demonstrated an association with improved metabolic control, it has been linked with reduced levels of diabetes-related stress (Boardway, Delamater, Tomakowsky, & Gutai, 1993). Despite findings of positive treatment outcomes, additional theoretically driven interventions for adolescents with diabetes are needed (Grey et al., 2002; Wysocki, Buckloh, Lochrie, & Antal, 2005), particularly those that simultaneously target metabolic control, psychosocial maladjustment, and relevant caregiver issues.

The purpose of this article is to describe the development and implementation of a novel group intervention for diabetic teens and their caregivers. This group intervention, named *Teen Power*, was designed to improve medical adherence in teens with DM1 by promoting psychosocial adjustment, eliminating psychological barriers associated with poor diabetes management, and reducing diabetes-specific stress in caregivers. The curriculum and format of *Teen Power* was based on *Girl Talk*, a group intervention developed at Children's Hospital Los Angeles (CHLA) for adolescent females with craniofacial abnormalities and their caregivers (Miller et al., 2007; Nicolaou, Johns, & Garcia, 2008). The interventions used in the *Teen Power* curriculum address the unique needs of diabetic teens by including a combination of process- and skills-based activities and a variety of components previously linked to positive metabolic outcomes and improved psychosocial adjustment in diabetic teens. Components include family and peer involvement, psychoeducation,

self-monitoring, and stress management. The present *Teen Power* curriculum is the end result of a series of modifications over five sequential group cycles and is based on input from diabetes experts and group participants to optimize goal attainment. Modifications included expansion of inclusion criteria (i.e., from female-only to co-ed) and extension of the group's duration (i.e., from 6 to 10 weeks).

Teen Power is offered as an adjunct to medical treatment and has received positive feedback from participants and interdisciplinary team members. During informal interviews with group participants, both teens and caregivers reported that this intervention was their first opportunity to meet other families coping with diabetes and that they exchanged contact information to maintain relationships. They also reported having learned new skill sets for promoting positive health outcomes. Data from pre- and post-treatment measures are currently being collected and will be analyzed for treatment effectiveness when an adequate sample size is obtained. A preliminary review of questionnaire responses demonstrated reduced levels of caregiver stress and more positive attitudes toward diabetes among teens following group participation.

TEEN POWER GROUP INTERVENTION

Development and Implementation

Teen Power was developed at the CHLA University Center for Excellence in Developmental Disabilities (UCEDD). Partnerships were made with the hospital's Comprehensive Childhood Diabetes Center (CCDC) and the Department of Child and Family Services Medical Placement Units (DCFS MPU), who assisted in assessing family interest in and promoting linkage to the intervention. The group intervention was offered to adolescents with poor diabetes adherence and mild to moderate symptoms of depression. Patients at all stages of treatment were referred for participation.

The implementation of the group intervention was a collaborative effort by an interdisciplinary team representing clinical psychology, medicine (diabetology), nursing, social work, and nutrition. Team members were responsible for different phases of the group's implementation and participated in activities based on their area of expertise (e.g., an endocrinologist provided psychoeducation about DM1 and a CCDC dietitian spoke to healthful meal preparation). CCDC and DCFS MPU staff assisted with recruitment and referral of families while UCEDD clinicians assumed primary responsibility for facilitating group sessions and coordinating group activities. All

interdisciplinary team members consulted on a regular basis to review each session's agenda and treatment objectives, ensure treatment fidelity, and monitor participants' progress.

Theoretical Model

The *Teen Power* group intervention is conceptualized theoretically using an information-motivation-behavioral skills (IMB) model (J. D. Fisher & Fisher, 1992; J. D. Fisher, Fisher, & Shuper, 2009; W. A. Fisher, Fisher, & Harman, 2003). This model, originally developed to predict and evaluate health behavior change processes associated with HIV/AIDS, focuses on the availability of health and disease related information, the extent of an individual's motivation to engage in health-promoting behaviors, and the presence of a behavioral skill set sufficient to encourage health-promoting behaviors. The model has recently been applied to an adult Type 2 diabetic population (Osborn & Egede, 2010). Findings showed that increased diabetes knowledge, personal motivation, and social support were associated with positive health behavior change, which predicted improved metabolic outcomes (Osborn & Egede, 2010). This study provided empirical support for using the IMB model as a health behavior change framework for improving glycemic control in adults with diabetes. The *Teen Power* intervention aims to extend the application of this model to a pediatric sample with Type 1 diabetes. Group activities and interventions are directly informed by the IMB model (Table 1) and are designed to enhance diabetes knowledge, increase personal motivation through peer and family support, and promote effective coping and diabetes management skills as outlined below.

Information

Table 1 outlines how psychoeducation is provided throughout the group curriculum to promote accurate understanding of diabetes-related health information and emotional barriers to optimal medical adherence. Misconceptions are corrected (and behaviors are modified accordingly) to promote improved diabetes management. For example, participants have reported basing their use of diabetes management strategies on culturally laden beliefs (e.g., use of natural herbs because insulin is believed to be harmful) and not on information from healthcare providers. Group facilitators respond by reinforcing caregiver attempts to effectively manage their teen's diabetes, while reinforcing communication of these efforts with health care providers and providing linkage to appropriate resources (e.g., endocrinologist, American Diabetes Association [ADA]) to correct

Table 1 Components of the Information-Motivation-Behavior Skills (IMB) Model and Corresponding Interventions

<i>Information</i>	<i>Motivation</i>	<i>Behavior Skills</i>
Psychoeducation aims to dispel myths and promote accurate understanding of diabetes-related health information	Unstructured mealtime allows development of rapport and establishment of social support network	Unstructured mealtime provides opportunity for teens to engage in diabetes management behaviors
Q & A session facilitated by hospital endocrinologist provides psychoeducation about DM1 and its management	Linkage to diabetes mentor provides a positive role model who has experienced academic and social success and can instill hope	Skill-building workshops promote coping, stress management, self-expression, assertiveness, and communication skills
Meal preparation activity facilitated by chef and dietician emphasizes importance of healthy diet and offers healthy food alternatives		Sessions focused on discussion of school issues, transition to adulthood, and high-risk behaviors promote diabetes management skills, problem-solving skills, and healthy decision making
Participation of young adult mentor diagnosed with diabetes provides real-world examples of how to implement diabetes management strategies and effectively cope with psychosocial stressors		Meal preparation activity provides hands-on practice in preparing and cooking diabetes-friendly meal

misunderstandings. Psychoeducation is also provided during scheduled activities and workshops facilitated by health care experts in order to clarify information about diabetes management and address specific questions and concerns raised by group participants. The participation of a young adult mentor diagnosed with Type 1 diabetes allows opportunities for additional discussion about successful diabetes management and coping. As expected, teens and caregivers place a high value on information from mentors given the mentors' personal experiences with diabetes.

Motivation

Research based on the IMB model proposes that depression inhibits an individual's ability to engage in optimal diabetes care due to a reduction in social motivation (Egede & Osborn, 2010). *Teen Power* creates a social setting in which shared experiences are discussed, challenges and barriers are normalized and confronted, and group cohesion is fostered. This social context promotes increased motivation and perceived support. As Table 1 illustrates, weekly opportunities to socialize in an informal setting (e.g., unstructured mealtime) allow rapport to develop naturally and for families to create social contacts. Linking families with a diabetes mentor instills hope of successful diabetes management and positive quality of life, further contributing to one's personal motivation.

Behavior Skills

As detailed in Table 1, activities and skill-building workshops are incorporated to provide the specific emotional and behavioral tools needed to practice new healthful behaviors. For example, the unstructured mealtime is an opportunity for adolescents to practice and be reinforced for appropriate diabetes management, while caregivers are praised for engaging in positive diabetes-related communication with their teen. Workshops targeting coping skills, stress management, and communication allow group participants to learn and practice new skill sets. Problem-solving around difficult transitional and developmental issues is fostered to promote positive health behavior change and a meal preparation activity gives hands-on practice to improve dietary habits in the home.

Facilitative Conditions and Change Processes

Yalom and Leszcz (2005) highlight the importance of building cohesion, instilling hope, and promoting self-disclosure in the context

of group psychotherapy. When the sense of group cohesion is strengthened, group members experience feelings of trust, belonging, and togetherness. As hope is instilled, group members recognize that other members' success is helpful and a sense of optimism increases. Self-disclosure involves sharing advice or feedback and this helps group participants gain insight about their interpersonal impact. The first two sessions of the *Teen Power* intervention are devoted to this process. Group cohesion is facilitated through introductions and the shared development of personal diabetes-related goals. Introductions include sharing caregiver experiences and contextual factors surrounding the teen's DM1 diagnosis. Group leaders instill hope by normalizing challenges, validating feelings, and emphasizing shared experiences. Hope is further raised by introducing families to a young adult diabetes mentor, who demonstrates by example that diabetes can be successfully managed and that professionally and personally fulfilling lives are attainable for individuals with DM1. Early group sessions are also characterized by the establishment of ground rules (e.g., respect each person's opinion) to ensure a safe environment for self-disclosure.

Group leaders make continuous efforts to maintain group cohesion, instill hope, and encourage self-disclosure in order to facilitate health behavior change. Group leaders also reinforce proximal steps toward diabetes-related goals to further support the change process. For example, group leaders take an efforts-based perspective with participants, praising them for expressing a commitment to behavior change and reinforcing initial steps toward long-term health-related goals.

Group Format and Curriculum

The *Teen Power* group intervention is comprised of both an adolescent group and caregiver group. Groups meet once weekly (120 min) for 10 consecutive weeks. All group sessions begin with adolescents and caregivers meeting jointly for an unstructured mealtime (30 min). Teens are reinforced for engaging in diabetes management behaviors (e.g., checking blood-glucose levels prior to eating) and caregivers are praised for engaging in positive communication with their teen within a controlled public setting. Following this mealtime, adolescents and caregivers meet separately (90 min) for process- and skills-based activities that target diabetes-specific barriers to optimal medical and mental health outcomes (Table 2). Activities that will aid personal efforts to better manage diabetes and successfully cope with emotional barriers are a particular focus of the *Teen Power* curriculum. For example, art-based activities are an effective means of coping

Table 2 Teen Power Curriculum: Interventions and Goals by Session

Session	Intervention(s)	Goal(s)
1	<p><i>Introductions and Development of Rapport.</i> Groups begin with basic introductions and teens participate in additional icebreaker activity. Group leaders facilitate discussion of the challenges and barriers to diabetes management as well as sources of emotional and instrumental support that promote coping and medical adherence. Group leaders highlight commonalities among participants' experiences and normalize struggles.</p>	<p>Reduce anxiety Develop rapport Facilitate group cohesion</p>
2	<p><i>Development of Goals.</i> Group leaders facilitate broad discussion of personal/life goals as well as diabetes-related goals. Teens are assisted in identifying appropriate (and attainable) short- and long-term goals related to diabetes management. Caregivers are assisted in identifying goals related to reducing overall stress levels. Group leaders help to link goals to specific challenges identified in Session 1.</p>	<p>Identify short-term and long-term goals to improve diabetes management and caregiver stress</p>
3	<p><i>Finalization of Goals.</i> Group leaders help teens define diabetes-related goals in concrete terms. Teens identify specific behavioral changes to be made over remaining 7 weeks of group to move towards identified goals. Group leaders help caregivers to identify strategies for helping to support and reinforce teens' progress.</p>	<p>Operationalize goals and promote goal attainment</p>
4	<p><i>Self-Esteem and Self-Expression.</i> Group leaders encourage teens to express themselves through an art-based activity such as a self-portrait or written poem. Teens are provided with arts and crafts materials, including newspaper/magazine clippings for participants who may not feel comfortable painting or drawing. Teens are encouraged to share their finished product with the group. Group leaders promote caregiver discussion about parenting strengths and focus on gains made toward diabetes-related goals.</p>	<p>Build self-esteem Develop positive self-image</p>
5	<p><i>School Issues and Transition to Adulthood.</i> Group leaders facilitate discussion with teens about specific barriers to medical adherence in school and job settings. Group leaders facilitate discussion with caregivers about how to support teens' transition to young adulthood and promote appropriate autonomy. Group leaders elicit specific examples of difficult situations, highlight shared experiences, and facilitate problem-solving around these issues. A jewelry-making activity for teens may be incorporated where they are able to decorate a medical ID bracelet that identifies them as an individual with diabetes.</p>	<p>Develop problem-solving skills Promote medical adherence in educational and vocational settings</p>

6	<p>Mindfulness and Stress Management. Teens and caregivers are introduced to exercises and activities that promote mindfulness, relaxation, and stress management (e.g., yoga). Benefits of stress management are discussed and group leaders facilitate brainstorming of the myriad of ways that stress can be alleviated. Teens and caregivers are encouraged to incorporate a new method of stress management into their weekly routine.</p>	<p>Improve coping skills</p>
7	<p>Assertiveness and Communication. Improvisation activities are utilized to increase teens' comfort with verbal expression. Role-plays are incorporated to allow opportunities for teens to practice assertiveness skills (e.g., declining an unhealthy snack from a peer). Group leaders facilitate discussion with both teens and caregivers about barriers to effective communication with peers and family members and factors that impact the decision to disclose a diabetes diagnosis.</p>	<p>Increase assertiveness and overall communication skills</p>
8	<p>Physical Exercise. Teens receive a group lesson in a physical activity (e.g., dance, boxing) that can be incorporated into a regular exercise routine. Teens are asked to check blood-glucose level before and after engaging in physical activity. Group leaders help teens understand why monitoring blood-glucose levels is important in this situation and link physical exercise to discussion of stress management from Session 6. Group leaders facilitate discussion with caregivers about importance of regular exercise in effective diabetes management and identify strategies for supporting and reinforcing teens' engagement in physical activity.</p>	<p>Promote healthy exercise routine Promote appropriate diabetes management</p>
9	<p>Diabetes Knowledge and High-Risk Behaviors. An endocrinologist from the CHLA Diabetes Center facilitates a Q&A session with both teens and caregivers to promote dialogue about diabetes and its management as well as the psychosocial aspects of having a diabetes diagnosis. Contributing factors to high-risk behaviors (e.g., substance use, deliberate noncompliance, sexual activity) are identified and strategies for reducing risk are discussed.</p>	<p>Increase diabetes knowledge Promote problem-solving Reduce high-risk behaviors</p>
10	<p>Nutrition. A hospital dietician and local chef co-lead a meal preparation activity in which teens and caregivers receive hands-on instruction in preparing a diabetes-friendly meal. Group leaders promote discussion about dietary issues and alternative food choices.</p>	<p>Promote healthy diet Increase knowledge and skills in healthful meal preparation</p>

with depression and negative feelings about diabetes and of facilitating the communication of thoughts related to living with a chronic illness (Stuckey & Tisdell, 2010). Activities such as yoga, dance, boxing, and cooking also target diabetes-related obstacles by improving stress management and addressing the need for more physical activity and healthy food options (see Table 2, Sessions 6, 8, and 10). Activities and discussion topics are selected to be of interest to both male and female participants and to promote active involvement of both genders. This is particularly important for the caregiver group, as limited involvement in diabetes care by male caregivers is common and fathers have been found to experience diabetes as stressful (Gavin & Wysocki, 2006). Strategies for reducing barriers associated with male caregiver participation are warranted (Berg et al., 2008) and group leaders are therefore mindful to identify and problem-solve such barriers early in treatment. All group activities can be interchanged across weeks to accommodate participant-specific needs. The group culminates in a graduation ceremony that celebrates and reinforces the skills learned by group participants.

Addressing Medical Standards

The development of the *Teen Power* curriculum represents an important effort to enhance adherence to standards of care. As such, the interventions utilized are designed to be in accordance with current medical standards of care for youth with DM1 (ADA, 2010; Silverstein et al., 2005) and several group sessions focus on salient topics as indicated below and detailed in Table 2: (1) Developmentally appropriate education on diabetes management delivered by an interdisciplinary health care team to the patient and family (Session 9), (2) consultation with a dietician to discuss dietary considerations and develop an appropriate nutritional plan (Session 10), (3) moderate physical exercise (Session 8), (4) ongoing assessment of behavioral, emotional, and psychosocial functioning, particularly depressive symptomatology and availability of coping skills (across all sessions, with objective self-report measures collected in Sessions 1 and 10), (5) increasing responsibility for adolescents to promote autonomous management of diabetes (Session 5), (6) caregiver-child collaboration and family involvement in diabetes management and medical decision-making (Session 9), and (7) addressing risky behaviors (e.g., sexual activity, substance use) and facilitating the transition to adulthood (e.g., safety precautions for driving) (Session 5). Delamater (2009) echoes similar recommendations and highlights the importance of mental health specialists as part of the interdisciplinary health care team to assess and address social-emotional functioning.

Addressing Cultural Needs

The caregiver group has had majority representation of low-income, monolingual Spanish-speaking adults, reflective of the high proportion of Latino families served by CHLA mental health providers (70%, 2008–2010). Addressing the unique needs of the Latino population was an important consideration in the development of the *Teen Power* intervention, which was created to ensure effective communication and access to care. Research has confirmed a significant relationship between cultural factors on health care interactions and access to mental health service (Cortes, Mulvaney-Day, Fortuna, Reinfield, & Alegría, 2009; Shattell, Hamilton, Starr, Jenkins, & Hinderliter, 2008). Caregivers frequently identify language barriers as a significant source of frustration associated with efforts to navigate their child's health care. This is consistent with reported links between language barriers and lower rates of access to health care among Latinos (Kataoka, Zhang, & Wells, 2002; Pumariega, Glover, Holzer, & Nguyen, 1998). The *Teen Power* curriculum includes interventions in Spanish by bilingual/bicultural leaders to eliminate language barriers, allowing caregivers to openly communicate culturally driven beliefs about chronic illness, diabetes, and parenting in their native language. Caregivers report that the opportunity to communicate with peers in their native language fostered a sense of cohesion and that the provision of a bilingual, culturally sensitive intervention contributed to consistent attendance.

Culturally tied beliefs play an important role in diabetes management because they impact attributions about diabetes and health care. While some research suggests that Latinos' beliefs are generally consistent with biomedical explanations of diabetes, inconsistencies still exist and should be targeted in intervention (Weller et al., 1999). Recent studies have identified common misconceptions about diabetes held by low-income, minority populations such as attributing diabetes control to subjective cues unrelated to actual glucose control (McAndrew, Horowitz, Lancaster, & Leventhal, 2010), believing that differences between normal and elevated blood-glucose levels can be "felt" (Mann, Ponieman, Leventhal, & Halm, 2009), and believing that physicians can cure diabetes (Mann et al., 2009). *Teen Power* caregiver group participants shared similar beliefs associated with DM1 and this provided opportunities to explore the effect of beliefs on diabetes management and to correct misconceptions. One belief frequently shared by caregivers is that physicians are "powerful others" and infallible. The perception of physicians as powerful reflects an external locus of control and is a barrier commonly associated with open parent-physician communication. Researchers have suggested that

an internal locus of control has a positive impact on diabetes management (Philis-Tsimikas et al., 2004), and *Teen Power* aims to promote such factors to facilitate optimal care and diminish barriers. Specifically, group facilitators engaged participants in discussion and problem-solving while providing empirically based information as opposed to attempting to overtly dispel their cultural belief system.

DISCUSSION AND FUTURE DIRECTIONS

The *Teen Power* group curriculum was developed as a mental health intervention for teens with DM1 and their caregivers, with a primary focus on improving glycemic control by targeting social-emotional barriers to optimal diabetes management. The program is theoretically driven by the IMB model and has been revised through interventionist and participant feedback to optimize goal attainment. The process of continually refining diabetes interventions based on participant feedback is a vital step in ensuring the implementation of an optimal treatment program (Hood et al., 2010; Sullivan-Bolyai et al., 2010) and this process was followed to ensure that the current *Teen Power* group curriculum best meets patient needs.

Novel interventions were included in the group curriculum to promote consistent attendance, active participation, and maintenance of newly learned skills following participation in the group. For example, an unstructured mealtime was offered at the beginning of each group session. Caregivers reported that inclusion of a meal ensured timely arrival and consistent participation given that many caregivers transported their children to the group immediately following the school and/or work day. The provision of a free meal was also desirable to caregivers given their limited financial resources. Patton and her colleagues (2008) corroborated previous findings that mealtimes are challenging to caregivers of children with DM1 given the complexity of diabetes management. While researchers have studied the mealtime behaviors of young children with DM1 and their caregivers, similar information for teens is lacking and may be gleaned from this group intervention.

Research suggests that multi-component interventions targeting both psychological and medical goals yield strong treatment effects (Hood et al., 2010; Krichbaum, Aarestad, & Buethe, 2003). A recent study showed that Latino adults with Type 2 diabetes were most successful in goal attainment when working to achieve dual goals related to both glycemic control and overall lifestyle changes (D. R. Anderson, Christison-Lagay, & Procter-Gray, 2010). The *Teen Power* curriculum was designed to promote the development of health promoting

behaviors among Type 1 diabetic teens by simultaneously targeting medical adherence and psychosocial barriers in order to optimize positive treatment outcomes.

The interventions utilized in *Teen Power* were also designed to be flexible and adaptable to teens' varying levels of psychological and social-emotional development. Consideration of the adolescent's developmental stage is necessary to achieve an optimal balance between parental monitoring and independent diabetes management (ADA, 2010). *Teen Power* offered teens and caregivers the opportunity to negotiate this balance through dialogue with others who share similar life experiences. In this way, the group promoted social support and networking. Indeed, this was the first opportunity for the majority of participants to meet other diabetic teens and to dialogue with a young adult diabetes mentor. Effective diabetes management can be particularly difficult for teens at a young developmental stage. The *Teen Power* intervention offers these adolescents specific activities and workshops, as well as an opportunity to learn from their peers. For example, teens who openly engaged in diabetes management behaviors within the group setting appeared to have a positive influence on peers who were reluctant.

In an effort to evaluate the effectiveness of the *Teen Power* intervention, data on depression, caregiver stress, attitudes toward diabetes, and motivation to make positive health behavior change are currently being collected and will be analyzed for treatment effectiveness when an adequate sample size is obtained. Future groups will also include objective pre and post measures of serum hemoglobin A1c (HbA1c) to evaluate the group intervention's impact on metabolic control. While group treatment effects targeting glycemic control and psychological distress may be statistically small, experts maintain that psychological interventions have a clinically meaningful impact on medical adherence and psychosocial adjustment and should be offered as adjunct therapy to medical treatment (Winkley, Landaus, Eisler, & Ismail, 2006). Furthermore, studies show that psychosocial therapies may have a delayed treatment effect on glycemic control (Wysoki et al., 2001) suggesting that the acquisition of longitudinal data may reveal additional treatment gains. Participant feedback on the *Teen Power* curriculum has been consistently positive with families citing improved social support and diabetes outcomes as a result of group participation. Empirical investigation of the intervention's treatment effects using both objective (e.g., HbA1c) and subjective (e.g., self-report) measures will continue to inform the delivery of the curriculum.

Mental health care providers within pediatric settings are encouraged to consider the implementation of psychosocial group

interventions such as *Teen Power* as an adjunct to medical care efforts in diabetes management. This study describes the development and implementation of a novel group intervention for diabetic teens and their caregivers, and extends the application of the IMB model to a diverse pediatric diabetes cohort. It is the beginning endeavor to present an empirically supported group intervention for a multiethnic population with a focus on Type 1 diabetic adolescents and their caregivers.

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