Psychosocial Group Interventions in Diabetes Care

The need for effective, well-evaluated psychosocial interventions to assist people in dealing with the daily demands of diabetes has been urgently stressed in several reviews. Especially now that treatment regimens are becoming more and more intensive, comprehensive behavioral changes are required. Additional psychosocial support is called for to help people to make these changes and to preserve and sustain their efforts with the goal of optimizing both glycemic control and quality of life. As the burden of diabetes rapidly increases, there is a pressing need to deliver diabetes care in a more comprehensive and cost-effective manner. Delivering care in a group instead of in an individual format may be an effective way of doing that.

Psychosocial Group Interventions in Medical Illness

Group therapy has been used successfully for decades in the treatment of a wide variety of psychiatric disorders and psychological problems. In patients with chronic illnesses, group interventions have become popular as an adjunct to medical treatment. Group interventions for people with medical illnesses have particular requirements and characteristics, which have been well described by Spira. Such groups are distinctive in that they mostly address coping difficulties rather than frank psychopathology. Furthermore, participants usually have very different past experiences, personality styles, and resources. Yet sharing the same medical condition provides them with ample common ground.

Many aspects of care (i.e., providing information, training in behavioral skills, addressing interpersonal problems) are just as easily and effectively addressed in a group as in an individual care format. Thus, from a cost- and time-efficiency perspective, a group format may be a better choice than individual counseling. Group interventions may be conducted either with participants who have diverse problems and concerns or with people all sharing the same problem. A self-management program originally developed for people with arthritis, for example, was successfully transferred to groups with varying chronic conditions.

Advantages of group over individual counseling include obtaining emotional support from people with similar experiences and being able to use the experiences of others as a model. Being part of a group, being understood by and understanding others, and being able to give and receive help strengthens the sense of belonging and enhances emotional well-being. While exploration of long-standing intrapersonal problems may be better addressed individually,
groups provide a richer learning environment to recognize inadequate interpersonal patterns and skills.

There are three main types of group intervention, each with its own goals and structure. Educational groups mostly have a brief, therapist-centered format focused on providing information and teaching practical skills. Interactions are limited to asking questions. Social and emotional support groups are generally less structured, with topics of concern raised by the participants, with the therapist facilitating free expression in a safe environment. Peer-led support groups, common for people with physical illnesses, are self-help groups that often include little or no professional involvement. The degree of professional involvement hardly affects characteristics of these groups and their participants.10 Because there is extremely little research on peer-led support groups, these are not included in this review.

Coping skills training, the most common therapeutic approach in patients with chronic illnesses, uses an interactive format that combines lecture, practice, and group discussion. Such training aims to replace maladaptive coping behaviors with healthier alternatives. These interventions usually follow a short and structured format (6–10 meetings) and typically include training in problem solving, coping skills, cognitive restructuring, and stress management.

**Psychosocial Group Interventions in Diabetes**

This review provides an overview of the use and effectiveness of psychosocial group interventions in diabetes care. Because more and more behavioral techniques are being incorporated into diabetes education, the distinction between educational and other types of groups is often difficult. The focus here is on groups providing social and emotional support and coping skills training. Behavioral group interventions aimed at self-management training and lifestyle intervention are beyond the scope of this article.

The remainder of this article describes 1) the use of groups in dealing with psychological factors complicating diabetes, 2) the use of groups in dealing with physical and emotional consequences of diabetes, 3) support groups and diabetes camps, and 4) coping-oriented groups for dealing with the daily demands of diabetes. It concludes with remarks on future directions for group work.

**Groups Addressing Psychological Factors Complicating Diabetes**

Similar to populations suffering from other chronic medical conditions, the prevalence of psychological disorders, especially anxiety and depression, is relatively high among people with diabetes.1,3 This may result in deterioration of physical and emotional well-being and disruption of self-care routines. Treatment of these disorders (psychotherapeutic and/or pharmacological) mainly takes place in individual therapy, as recommended earlier for intrapersonal difficulties.8

To help people through the emotional turmoil they may face when confronted with a diagnosis of diabetes, several group interventions have been described. An early report describes positive effects of a crisis intervention clinic with discussion groups available for parents and children.11 The unique setting of this clinic, however, makes it hard to single out the added value of the group meetings.

A more recent study12 developed a program to help patients with type 1 diabetes reduce distress at disease onset and to achieve better future adaptation. Participants were enrolled in a prospective randomized controlled trial at the time of diagnosis (n = 23; 61% female; mean age 24.52 ± 4.62 years; mean hemoglobin A1C (A1C) 10.33 ± 1.71%). They all received standard intensive treatment and diabetes education, with (n = 10) or without (n = 13) the distress reduction program. Twenty-five weekly meetings lasting 90 minutes each were lead by a psychotherapist, who brought up the following topics: expression of grief and anxiety about the loss of health, impact on social and family life, anxiety about hypo- and hyperglycemia and late complications, and unconscious personality patterns (denial, frustration, aggression). The program had a positive impact on depression, anxious coping style, and denial 3 months after treatment. However, even this intervention offering extensive face-to-face contact was not successful in maintaining benefits in the longer term.

Whether eating disorders occur more frequently in people with diabetes remains controversial.1,2 The distinctive features of diabetes treatment that may increase the risk (e.g., dietary restraints, inherent weight gain) and the potential serious consequences (poor glycemic control and complications) of eating disorders require early detection and treatment. These factors have led to the development of several group interventions for women with diabetes.

In a small study (n = 14), a six-group psycho-educational program for women with type 1 diabetes and subclinical eating disorders was no more successful than the wait-list control condition. Both groups showed improved psychological functioning but no changes in metabolic control, treatment adherence, or eating disorder symptomatology.13

In a randomized controlled trial, Olmsted et al.14 evaluated the effects of a brief intervention for young women with type 1 diabetes and disordered eating attitudes and behavior. Participants (n = 85, age 12–20 years, mean A1C 9.1 ± 1.5%) with elevated scores on the Eating Disorder Inventory were randomized to the intervention or treatment as usual. Delivered in a didactic style, the program was not designed for in-depth discussion of personal information. Six 90-minute sessions provided oral and written didactic information on eating problems, how to control symptoms of disturbed eating, and concerns about body image, with emphasis on the relationship between disordered eating and diabetes. Parents participated in identically structured but separate groups. Sessions were conducted by one professional with expertise in eating disorders and one familiar with adolescent diabetes. The program resulted in a reduction of disturbed eating attitudes, which was maintained at 6-month follow-up, but no reduction of insulin omission or A1C results.

Kenardy et al.15 evaluated the effects of cognitive behavioral group therapy (CBGT) on binge eating. Women with type 2 diabetes (n = 34; mean age 54.88 ± 10.47 years; mean A1C 7.46 ± 1.50%; 56% diet only, 38% oral medication, 6% insulin) were randomized to 10 weekly sessions of CBGT (n = 17) or non-prescriptive therapy (NPT, n = 17) focusing on acceptance of negative affect. Both interventions improved binge eating, mood, eating-related beliefs, and weight equally, but neither had an effect on glycemic control. CBGT participants remaining abstinent from binging at the end of treatment main-
tained their success at the 3-month follow-up, whereas NPT participants showed significant relapse. Bingeing seems a worthwhile target, in that reduction of bingeing frequency, controlling for reduction of body mass index, was associated with improvement in A1C results. Participants with more frequent binge episodes showed the least improvement, suggesting they need longer or more intensive treatment.

Although attitudes were modified, the short-term interventions using an educational approach were not successful in changing actual behavior. Eating disorders seem to require interventions with more opportunity for interaction, as modeled in the Kenardy study. The behavioral focus of CBGT seems useful in helping to maintain behavioral changes in the longer term.

The notion that glycemic control is affected by psychological stress has been established both in research and in the subjective experience of people with diabetes. It has been hypothesized that stress may cause poor glycemia either directly, through the hyperglycemic effect of stress hormones, or indirectly, by disruption of self-care routines. Interventions aimed at modifying the behavioral effects of stress are often incorporated into more comprehensive coping-skills programs, to be discussed later in this article.

Methods to help patients reduce physiological arousal caused by stress include biofeedback-assisted relaxation training and progressive muscle relaxation (PMR), usually in a time-intensive individual format.

Surwit et al. evaluated the efficacy and feasibility of a cost-effective outpatient group program for stress management training in a randomized, controlled trial. Individuals with type 2 diabetes (n = 108; not on insulin; mean age 57.3 ± 10.7 years; mean A1C 7.9 ± 1.8%) were randomized to either a control group (n = 48) receiving five weekly group sessions of diabetes education, or the experimental group (n = 60), attending five sessions of stress management training, involving PMR, instruction in stress-reducing cognitive and behavioral skills (identifying stressors, guided imagery, thought stopping), and education on health consequences of stress. Participants practiced PMR between sessions using audiotapes. Throughout 6 months, A1C results improved equally in both groups. At the 12-month follow-up, improvements were sustained in the stress management group only and resulted in a significant 0.5% reduction in A1C results. The intervention did not have any effect on perceived stress, anxiety, and general psychological health. Researchers did not find evidence to support the hypothesis that stress management is of greater benefit to subjects with higher levels of anxiety.

In an earlier small, controlled study on stress management training for groups of type 2 diabetic patients (n = 22; mean age 61.0 ± 10.2 years; mean A1C 11.0 ± 1.9%), participants were randomized to relaxation training or routine medical care. In six weekly 1-hour sessions, PMR, imagery, and group discussion of stressful life events were addressed. At the 4-month follow-up, training did not have any effect on glycemic control, generalized distress, anxiety, or daily hassles. Higher levels of anxiety and distress at baseline were associated with less improvement in glucose tolerance in the intervention group.

These short-term interventions aimed at reducing physiological arousal in older patients were not successful in modifying psychological variables related to stress and had mixed effects on glycemic control. These findings suggest that highly anxious individuals might respond better to individually administered interventions.

**Groups Dealing With Complications of Diabetes**

Complications that patients may face later in the disease may require renewed adaptation and the reestablishment of emotional equilibrium. For visual impairment, several group interventions are available. An early study offered an account of a short-term (seven weekly sessions) therapy group with four visually impaired patients, but contained only descriptive outcomes. Caditz has also described a support group for people with diabetes and visual impairment. The aims of the group were to give information about diabetes and visual impairment and to increase independence and self-esteem by providing emotional support. Groups of participants between the ages of 20 and 80 years met for 2 hours a week for 10–12 weeks. The meetings resulted in improved knowledge and use of visual aids, and group support helped participants emphasize the positive.

Aims of another combined educational/support group were to improve independence, self-esteem, and glycemic control in blind people (n = 29) with type 1 or type 2 diabetes. A multidisciplinary team delivered three sessions a week for 12 weeks, focusing on diabetes self-management skills for the visually impaired, monitored exercise, and group support. The program was successful in improving glycemic control, exercise tolerance, and psychosocial indices.

Fear of complications is a major concern for many patients. It may result in avoidance and neglect of diabetes care in some patients and in extreme concern and overreaction to diabetes in others. Zettler et al. developed a behavioral group program teaching participants with type 1 diabetes strategies to cope with complications. The aim of the intervention was to reduce anxiety and avoidance behavior, encourage adherence, and prepare patients for crises. Patients who reported elevated levels of anxiety on a screening instrument (n = 17; 65% female; 18% on insulin; mean age 58.3 ± 9.8 years; mean A1C 9.4 ± 1.6%), participated in an uncontrolled study. A psychologist delivered the program consisting of cognitive behavioral strategies (exposure in imagination, relaxation training, analysis of dysfunctional health beliefs) to small groups of four to six patients. The program consisted of six 1.5-hour sessions, with an additional 3-month follow-up session to report progress and discuss modification of goals and coping strategies. The majority of participants already had complications. At 3 months, results showed a reduction of fear and enhanced acceptance of the disease.

These interventions, whether they focus on dealing with the practical aspects or on emotional consequences, appear to be a welcome addition to participants.

Although long-term complications represent a threat for most patients, many will not be confronted with these serious consequences in the near term; some may never face them. Acute complications such as hypoglycemia and hyperglycemia are events that many individuals with diabetes have to deal with on a daily basis, especially when on intensive treatment. Developed over the past two decades, a behavioral program...
called Blood Glucose Awareness Training (BGAT) assists patients with type 1 diabetes to recognize, predict, avoid, and treat hypo- and hyperglycemic episodes more effectively.

The most recent version of BGAT consists of a training manual and eight weekly group meetings involving behavioral techniques (e.g., self-monitoring, direct feedback, active homework exercises). Four classes deal with recognizing symptoms of high and low blood glucose (e.g., physical symptoms of hormonal counterregulation, signs of neuroglycopenia, mood swings) and psychological factors influencing accurate detection and interpretation (e.g., attention, distraction, competing explanations, denial). The latter part of BGAT provides participants with information on food, exercise, and insulin to modify treatment decisions that may contribute to glucose dysregulation.

Several studies have confirmed the effectiveness of BGAT in improving detection of hypo- and hyperglycemia. A multicenter study (n = 79; 64% female; mean age 38.2 ± 9.0 years; mean A1C 10.3 ± 2.1%) showed BGAT was most effective among patients with reduced hypoglycemic awareness. Subjects maintained improved detection and reduced frequency of high and low blood glucose levels at the 12-month follow-up and had fewer episodes of diabetic ketoacidosis and severe hypoglycemia. Additionally, BGAT had beneficial effects on psychological functioning.

A randomized, controlled study with type 1 diabetic patients enrolled in an outpatient intensive diabetes treatment program showed improved glycemic control in BGAT and control groups. However, BGAT was successful in preserving protective counter-regulatory responses to hypoglycemia, thus suggesting that BGAT is a useful tool to decrease blunting of counter-regulation associated with improved glycemic control.

A Dutch study found no differences between the effect of BGAT delivered to groups compared to individual training. Overall results showed no positive effects of BGAT. This may be because of the use of a shortened version of BGAT or because of a small sample size.

BGAT improved the ability to detect high and low blood glucose in a small group of adolescents when compared to untreated control subjects. Participants’ performance after training, however, still remained poorer than that of adults. No controlled studies of BGAT for younger children are available.

**Diabetes Camps and Support Groups**

Literature on support groups and diabetes camps is abundant, suggesting that these are important sources of practical and emotional support for many adults, adolescents, and children with diabetes.

Since the late 1940s, summer camps have provided children with diabetes with recreation and education in a medically safe environment. These camps provide a psychosocial intervention with positive effects on locus of control in some studies but no effects on psychosocial adjustment in controlled designs. The use of generic measures not sufficiently sensitive to change and an already adequate level of psychological functioning among participants at the start may have biased the results in one of these studies.

A recent study evaluated the effects of camp participation on knowledge, acceptance of diabetes, metabolic control, and incidence of acute complications among 256 children (aged 8–16 years; 53% female), attending 10-day summer camps in Italy. A typical day at camp consisted of 3 hours of theoretical and practical training in self-management and 6 hours of recreation and sports. Every other day, a psychologist led group meetings on topics suggested by the children. Results show a substantial improvement in knowledge at the end of camp sessions. At follow-up, A1C decreased substantially (from 10.9 ± 2.9 to 7.1 ± 2.5%) in children attending three monthly follow-up meetings (n = 75) back at the hospital, while A1C remained stable (9.8 ± 2.4%) in children not showing up for follow-up (n = 13).

A review by Tattersall et al. described the use of groups in diabetes care in the 1970s. Unstructured group meetings utilized a therapist to facilitate discussion on topics participants raised. Support groups are still popular, but unfortunately, the lack of systematic, formal evaluation persists. They found no differences in glycemic control or psychological well-being among three groups of adult patients with type 1 diabetes (n = 46) randomly assigned to diabetes education, education and group therapy, or treatment as usual. In a similar study of obese type 2 diabetic patients (n = 79), only the group receiving peer support in addition to education showed weight loss at the 8-week follow-up. However, glycemic control did not change.

In a study using support groups as an adjunct to intensive outpatient management programs for both type 1 and type 2 diabetic patients, no additional positive effects were seen in patients randomized to receive eight support meetings supervised by a psychiatrist and diabetes educator. Both groups showed improved glycemic control, knowledge, self-care behaviors, and emotional adjustment at the 7-month follow-up. Attendance was low (42% attended at least one meeting). Results showed that the group attracted patients who subjectively expressed a great need for advice and emotional support at baseline and who had easy access to the center.

In a study of the quality of life effects of participating in a support group, a low participation rate (29%) among eligible patients prohibited randomization. Participants (n = 24; 37.3 ± 12.1 years; mean A1C 9.5 ± 1.9%) attended 5–12 biweekly group meetings over 6 months. The intervention did not affect generic quality of life.

Gilden et al. found that attending a support group yielded positive effects on knowledge and psychosocial functioning in older male patients. Male participants (mean age 68 ± 13.3 years) were randomized to either six weekly educational sessions followed by 18 monthly support group sessions (n = 11) or education only (n = 13). A third convenience sample (n = 8) served as a control group. The support group consisted of continuing education, discussion, and structured social activities. At the 2-year follow-up, both groups receiving education showed reduced stress, better family functioning, and better glycemic control than did the control group, but reported less involvement in social activities. Attending the support group resulted in improved knowledge and psychosocial functioning.

In summary, although support groups improved psychosocial functioning in some studies, they did not have the intended effects on glycemic control.
Groups Dealing With the Daily Demands of Diabetes

Coping with the daily demands of diabetes is hard for many, if not all, people with diabetes. Various group interventions attempt to help patients cope more effectively with the daily hassles of diabetes. These coping-oriented group interventions typically consist of problem solving and/or social skills training and use cognitive and behavioral strategies.

In children and adolescents, training in coping skills is usually aimed at improving assertiveness and social skills. The short and structured nature of these interventions seems to have positive effects on attendance\(^\text{35}\) and assertiveness.\(^\text{36}\)

Two uncontrolled studies involving adolescents in diabetes camp settings added a “life skills” component to diabetes education.\(^\text{27,37}\) One study\(^\text{27}\) evaluated the effect of stress management training in campers (n = 108; aged 13–17 years) who received 1 hour of training each day for a week. Campers learned to identify sources of stress and to use stress management techniques (relaxation, imagery, exercise, problem solving, identification and modification of negative automatic thoughts in stressful situations).

After camp, participants used more adaptive coping strategies.\(^\text{27}\) A similar training in assertive communication skills\(^\text{37}\) resulted in improvement of self-reported assertiveness.

To enhance peer support, Greco et al.\(^\text{38}\) offered groups providing both education and support to adolescents with a recent diagnosis of type 1 diabetes (duration of diabetes <18 months; 48% female; mean age 13.1 ± 1.98 years) and to their best friends. Groups of adolescent-peer pairs met for four weekly 2-hour sessions delivered by a psychologist. Sessions focused on education, listening skills, problem solving (with a focus on potential support by peers), and stress management. Topics were practiced through games, exercises, and homework assignments.

Both adolescents with diabetes and their peers showed an increase in knowledge after the intervention. Actual support, which was already high at baseline, did not improve. Self-worth improved in peers, which may have reflected the significance of being able to provide support. Parents reported a decrease in diabetes-related conflict. Attendance in this study was excellent, which underscores the social validity of including peers in interventions for adolescents.

In a wait-list controlled study by Marrero et al.,\(^\text{39}\) group discussion on diabetes-related issues perceived as stressful, collective identification of coping strategies, and practice through role-play and exercise were used to provide adolescents (n = 23; 57% female; mean age 15 years) with supportive social networks to help them cope more effectively with crises. This long-term group (2-hour semi-monthly meetings for 8 months) included adolescents identified as potentially benefiting from psychosocial support but not requiring psychotherapy. Participants showed better psychological functioning when compared to control subjects.

Adolescents with type 1 diabetes attending a 3-week summer school (n = 21; aged 13–18 years) were randomized to daily social learning exercises to improve social skills and the ability to resist peer pressure or a control group spending an equal amount of time learning medical facts about diabetes.

At the 4-month follow-up, glycemic control in the social skills group was better than that of control subjects.\(^\text{40}\) Massouh et al.\(^\text{41}\) replicated these results.

For children identified as having inadequate social skills (n = 11; aged 9–12 years), 10 sessions of specific training using modeling and role playing resulted in improved coping abilities but not in improved A1C results.\(^\text{42}\)

In adolescents with a history of poor adherence and control (n = 19; aged 12–17 years), a 13-session training in stress management involving cognitive restructuring, assertive communication, problem solving, role playing, and discussion was successful in reducing diabetes-specific distress when compared to an untreated control group but left glycemic control, adherence, and coping behavior unchanged.\(^\text{43}\)

A randomized, controlled study evaluated the effects of a coping skills training (CST).\(^\text{44}\) This program aimed to increase participants’ sense of competence and mastery by retraining nonconstructive coping styles and forming more positive patterns of behavior in adolescents initiating intensive insulin therapy. Sixty-five adolescents (57% female; mean age 15.4 ± 2.2 years; mean A1C 8.95 ± 1.7%) were randomized to intensive management without (n = 31) or with (n = 34) CST. Intensive management included monthly outpatient visits and frequent telephone contacts. For 4–8 weekly sessions of 60–90 minutes each, groups of two to three patients met with a nurse practitioner experienced in diabetes and pediatric psychiatry. They practiced problem solving, social skills, and cognitive behavior modification through role playing and modeling, using scenarios of difficult diabetes-related situations. At 3 months, CST participants showed greater improvement in A1C, self-efficacy, coping, and quality of life than did control subjects. Positive effects were maintained at the 6- and 12-month follow-up.\(^\text{45}\) In female participants, CST resulted in decreased weight gain and less hypoglycemia.

A nonrandomized behavioral program aimed at improving treatment adherence and stress management in adolescents also had positive effects on psychosocial variables that were maintained at the 12-month follow-up.\(^\text{46}\) Adolescents with type 1 diabetes (52% female; aged 11–18 years) participated in a behavioral intervention (n = 18) or continued to receive standard medical care (n = 19). The intervention group attended 12 sessions (including two sessions for assessment and two with their parents). During the remaining eight sessions, participants received instruction and practice in meal planning, self-monitoring of blood glucose, blood glucose discrimination training, stress management, cognitive restructuring, social skills training, and problem solving.

Coping-oriented group interventions have also been found to benefit adults. A 12-session program for young women selected on the basis of nonadherence successfully improved self-reported self-management behaviors and self-confidence.\(^\text{47}\) However, the number of participants in this study was very small (n = 9).

Some studies have evaluated adding one or more sessions of coping skills training to an education program. Rubin et al.\(^\text{48}\) added to an outpatient education program two sessions of diabetes-specific CST based on a cognitive behavioral approach. This additional training included identifying individual regimen barriers, generating and evaluating potential solutions, identifying and modifying dysfunctional thinking patterns, and learning strategies to prevent relapse. Participants (n = 165, mean age 47.4 ± 16.5 years; 42% female; 38% type
1 diabetes; 63% taking insulin) showed improved emotional well-being and A1C, increased frequency of glucose monitoring, and decreased bingeing over 6 months after the intervention. Positive effects on self-esteem, anxiety, diabetes knowledge, and self-efficacy were maintained at the 12-month follow-up.49

Bott et al.50 included psychosocial modules in a 5-day inpatient training and teaching program for patients with type 1 diabetes who were not in adequate glycemic control (n = 83; 41% female; mean age 35 ± 10 years; mean A1C 8.1 ± 1.5%). Beyond the education component, patients attended two sessions of group discussions on individual goal setting and motivational and emotional aspects such as acceptance and coping strategies. At follow-up, A1C remained constant, whereas severe hypoglycemia decreased. Participants reported feeling less externally controlled and reported improvements in self-efficacy and in their relationship with their doctor.

Henry et al.51 evaluated the efficacy of a combined cognitive-behavioral stress management program in patients with type 2 diabetes whose physicians assessed that stress was subjectively affecting blood glucose levels. The program aimed to reduce stress and improve glycemic control. Patients (mean age 59.8 years; 53% female; 84% on oral medication; 16% treated with diet) were randomly allocated to the intervention (n = 10) or waiting list (n = 9). Participants attended six weekly small-group sessions of 1.5 hours delivered by a therapist and a psychologist to small groups (six to eight patients). Each session addressed a different topic: the cognitive behavioral model of diabetes, stress and diabetes, living with the future (worries about complications), and social relationships. Training focused on cognitive restructuring, stress management techniques, and behavioral strategies (cuing, self-monitoring). CBGT proved feasible in this selected group and was well appreciated. Results showed a substantial drop in A1C at the 6-month follow-up, while emotional well-being was preserved.

Weinger et al.54 randomized type 1 diabetic patients (n = 74; 68 female; mean age 31.2 ± 8.0 years; mean A1C 9.8 ± 1.7%) to either a similar 8-week psychologist-led CBGT intervention (n = 39) or cholesterol education classes to control for attention (n = 35). The program used cognitive restructuring and relaxation techniques to help participants achieve better glycemic control. At the 6-month follow-up, adherence and A1C were improved in both groups. There were no differences in A1C between groups at post-test, although CBGT participants realized a modest improvement from pre- to post-test. Quality of life was improved in the experimental group only.

Overall, these short, structured interventions seem relatively effective in improving psychosocial functioning and glycemic control, even over the longer term. For interventions that are part of a more comprehensive educational program, the relative benefit of CST remains difficult to disaggregate. In adolescents, preventive intervening appears more effective when integrated with the start of intensive management.

Using New Technologies for Groups

The Internet provides health care professionals and patients with new opportunities to exchange not only information, but also support. Zrebiec and Jacobson55 report on a World Wide Web–based educational and emotional resource for patients with diabetes. Over a period of 21 months, three professionally moderated discussion groups about nutrition, motivation, and family issues were actively visited on the Internet. Visitors responding to a survey were mainly over 30 years old, both users and nonusers of insulin, both recently diagnosed patients and those with longstanding diabetes, and comprised a larger proportion of females than males. Nearly half of the users logged in more than three times, and 79% rated participation as having a positive effect on their coping with diabetes.

A study by Barrera et al.56 showed that the Internet is actually perceived by its users as an effective source of support. In a randomized trial, 160 novice Internet users with type 2 diabetes (53% female; mean age 59.3 ± 9.4 years) were assigned to four Web-based conditions: diabetes information only, a personal self-management coach, or one of two interventions combining coaching and support. After 3 months, individuals in both support conditions reported significant increases in both diabetes-specific and general support.

Discussion and Future Directions

Reviewing the literature, it becomes clear that a group format may be applied in diabetes care either as a cost-effectiveness measure, or to provide patients with the additional benefits that are inherent to group interventions, or for both reasons. Apart from instances involving longstanding serious psychopathology, no evidence
suggestions the need to refrain from using groups for either reason.

To enhance psychosocial functioning and glycemic control, interventions with a short, structured format may seem to have more beneficial effects than groups relying on disclosure and sharing of experiences only. To achieve behavioral change, people need strategies and practice to translate new information into actual behavior and to implement new behaviors in real life.

While this review shows many examples of interventions with beneficial effects, some limitations should be addressed. Some populations that could greatly benefit from group interventions seem largely overlooked. For example, no accounts described group interventions for pregnant women or for preconception counseling in diabetes. Given that type 2 diabetes is now manifesting itself earlier in life, women may have an increasing need for support in this area.

As stated by many authors, there is still a dearth of well-described interventions that are systematically evaluated through randomized trials with adequate sample sizes. Most studies lack the statistical power to draw unambiguous conclusions.

Another problem lies in the assessment of outcomes. When using generic instead of disease-specific measures, other factors (intra-individual, social, environmental) that may have an impact on, for example, quality of life, remain unappreciated. When assessing glycemic control to evaluate the effectiveness of intervening at a psychosocial level, the processes mediating these effects are often overlooked. Psychosocial variables are addressed, which should result in behavior changes, which in turn should influence glycemic control. Often these processes remain a black box, and A1C is assessed directly after the intervention, before any resulting behavioral changes have actually had time to affect physiology.

Wait-list control groups are frequently used in intervention studies. However, these provide no control for nonspecific treatment factors (e.g., group support, expectation of success, or placebo effects), and identifying the effective elements of treatment is difficult. Future studies should use control groups getting equal amounts of health care contact to control for these factors.

The generalizability of results from research is constrained by low participation rates and high rates of participant dropout. Results often apply only to highly motivated people, who are willing and able to engage in psychosocial interventions that require great commitment in terms of time and effort.

In conclusion, psychosocial interventions offered in a group format are a promising addition to diabetes care and education. There are many examples of well-appreciated, effective, feasible interventions delivered by a wide range of professionals, including not only behavioral therapists but also dietitians, diabetes educators, and physicians. This confirms that with proper training and experience, behavioral and cognitive techniques can be applied effectively by health care professionals outside of the mental health specialties.

Future research should aim to translate interventions to other populations and settings, to develop new well-described interventions on a theoretically sound basis, and to evaluate such interventions through well-controlled, randomized study designs. The challenge for researchers and practitioners alike is to put this research into practice effectively.

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