Healthy Coping, Negative Emotions, and Diabetes Management

A Systematic Review and Appraisal

Edwin B. Fisher, PhD  
Carolyn T. Thorpe, MPH, PhD  
Brenda McEvoy DeVellis, PhD  
Robert F. DeVellis, PhD

From the Department of Health Behavior and Health Education, School of Public Health, University of North Carolina at Chapel Hill (Dr Fisher, Dr DeVellis, Dr DeVellis), and the Center for Health Services Research in Primary Care, Durham Veterans Affairs Medical Center, Durham, North Carolina (Dr Thorpe).

Purpose

The purpose of this systematic review is to assess the literature pertinent to healthy coping in diabetes management and to identify effective or promising interventions and areas needing further investigation.

Methods

A PubMed search identified 186 articles in English published between January 1, 1990, and July 31, 2006, addressing diabetes and emotion, quality of life, depression, adjustment, anxiety, coping, family therapy, behavior therapy, psychotherapy, problem solving, couples therapy, or marital therapy.

Results

Connections among psychological variables, behavioral factors, coping, metabolic control, and quality of life are appreciable and multidirectional. Interventions for which well-controlled studies indicate benefits for quality of life and/or metabolic control include general self-management, coping/problem-solving interventions, stress management, support groups, cognitive-behavioral therapy, behavioral family systems therapy, cognitive-analytic therapy, multisystemic therapy, medications for depression, and the Pathways intervention integrating case management, support of medication, and problem-solving counseling.
Conclusions

Psychological, emotional, related behavioral factors, and quality of life are important in diabetes management, are worthy of attention in their own right, and influence metabolic control. A range of interventions that achieve benefits in these areas provide a base for developing versatile programs to promote healthy coping.

Managing diabetes takes place in all areas of life amongst genetic, behavioral, family, social, community, organizational, economic, and political contexts. People with diabetes must cope with a wide range of challenges specific not only to the disease but also to other areas of their lives, which may nevertheless influence disease management and metabolic control. Accordingly, the American Association of Diabetes Educators has identified healthy coping as one of the key AADE7™ Self-care Behaviors and defined it as Healthy Coping—Health status and quality of life are affected by psychological and social factors. Psychological distress directly affects health and indirectly influences a person’s motivation to keep their diabetes in control. When barriers seem unsurmountable, good intentions alone cannot sustain the behavior. Coping becomes difficult and a person’s ability to self-manage their diabetes deteriorates. (http://www.diabeteseducator.org/AADE7/index.shtml)

The purpose of this review is to characterize the literature pertinent to healthy coping in diabetes, with a focus on identifying effective or promising interventions as well as areas in need of further investigation. In line with the AADE definition of healthy coping, the first part of this review summarizes evidence showing that diabetes management, health status, quality of life, and psychosocial factors are interrelated. The second part of the review summarizes evidence showing the connections between diabetes and specific psychosocial and emotional issues such as depression. The third part of the review examines evidence for the utility of healthy coping interventions as they improve quality of life and related psychological outcomes as well as metabolic control and clinical status.

With the exception of problem solving, which receives a separate review in this issue, no specific area of healthy coping includes sufficient numbers of well-controlled studies to support a meta-analytic review. In addition, the diversity of interventions addressing healthy coping and the need to appraise the general status of this emerging area of diabetes care make it more helpful to survey broadly and include observations from a variety of research approaches, rather than focusing on a relatively few articles that meet specified criteria of rigor. Accordingly, this review used (1) systematic review procedures in defining the terms for search but (2) narrative review procedures for the inclusion of articles identified without a priori inclusion criteria based on study methodology.

Recognizing the role of healthy coping within diabetes management raises questions about the interactions among psychology, behavior, and biology in human health and diseases. Before proceeding with the review of healthy coping, a brief review of how these interactions have been viewed in the past provides context for current thinking and research.

Historical Perspectives

The Freudian, psychoanalytic model that emerged in the 19th century distinguished between (1) biologically based symptoms and (2) functional symptoms, such as some paralyses for which no apparent biological pathology could be identified. It asserted that these functional symptoms were symbolic expressions of repressed conflicts. Only the lifting of repression and working through of underlying conflicts were thought able to alleviate these symptoms. In the first half of the 20th century, this view was extended to illnesses such as asthma, dermatologic disorders, and gastrointestinal problems. In its crudest form, this psychosomatic approach saw such disorders as the symptomatic expression of psychological problems. Understandably, this attribution of illnesses to psychological conflicts was greeted with little enthusiasm by those trained in the biological pathology and medical treatment of disease.

The development of behavior therapy in the 1950s and 1960s rejected the Freudian traditions of exploring motivational and repressed dynamics and focused on straightforward approaches to desensitizing anxiety problems, teaching skills such as assertion or problem solving, and providing incentives to help even those with profound disturbance such as schizophrenia lead fuller and more satisfying lives. However, parallel to the psychoanalytic movement half a century before,
behavior therapy was also extended to address medical problems. The extension of behavior therapy differed in an important way from earlier psychoanalytic approaches. Instead of attributing diseases to underlying or repressed motivations and emotions, behavior therapy carried to health problems its focus on teaching skills—in this case, skills to improve disease management and quality of life. For example, replacing earlier views of obesity as a manifestation of repressed oral fixations, early behavioral approaches focused on teaching people skills for shopping for and preparing healthy meals and minimizing temptations to eat excessively or make unhealthy food choices.

Building on the behavior therapy movement and parallel developments in health education, approaches emerged to teach individuals the skills necessary to manage diseases such as diabetes. Consistent with emphasizing the active role of the patient in diabetes management, this approach projected a view of the individual as a rational collaborator in her or his care. Perhaps in response to lingering tensions between psychosomatic/psychological and medical approaches to disease, the development of self-management during the 1970s through 1990s paid little attention to individuals' emotions or to the ways in which those emotions might complicate self-management.

However, research in the 1980s began to document how stress management might contribute to diabetes care as well as to the role of depression, including its relationships with metabolic control and psychological interventions to treat it. This was also fueled by research documenting the roles of stress, hostility, social isolation, and depression in cardiovascular disease. Unlike earlier approaches that pitted the psychological against the biological, the 1980s' return to exploring psyche and soma was grounded in general models in which psychological, behavioral, emotional, metabolic, genetic, and other biological factors interact in the expression of disease, course, complications, longevity, and quality of life. The American Association of Diabetes Educators has advanced recognition of the many connections among coping, behavior, emotions, and metabolism in diabetes management by identifying healthy coping as 1 of 7 key diabetes management behaviors.

**Search Procedures**

The relationships among challenges to diabetes management, psychological and social factors, and healthy coping interventions are diverse. As noted above, this review was designed to provide a broad appraisal of the diverse areas and promising approaches in the field. The review used (1) systematic review procedures in specifying the terms and approach to searching for articles but (2) narrative procedures in including articles without a priori criteria based on methods and design. Figure 1 outlines the search that supported the current review. Based on the evidence tables developed through the steps outlined in Figure 1, the authors developed the Summary of Healthy Coping Evidence that is the base for the descriptive review that follows.

Throughout the text and tables, GHb is used as an abbreviation for glycated hemoglobin, also commonly referred to as glycosolated hemoglobin, HbA1c, HbA1, or A1C. These are a series of “stable minor hemoglobin components formed slowly and nonenzymatically from hemoglobin and glucose. The rate of formation of GHb is directly proportional to the ambient glucose concentration.” Thus, GHb provides an estimate of metabolic or blood sugar control reflecting the previous 120 days. GHb is used as a generic term to refer to the variety of individual tests employed.

**Results of Review**

The review of articles is organized into 3 parts. Part 1 summarizes evidence showing that diabetes management, health status, quality of life, and psychosocial factors are interrelated. Part 2 summarizes evidence showing the connections between diabetes and specific psychosocial and emotional issues such as depression. Part 3 examines evidence for the utility of healthy coping interventions as they improve quality of life and related psychological outcomes as well as metabolic control and clinical status.

**Methods**

The literature search for this review identified 186 articles. These are described in a Summary of Healthy Coping Evidence that provided the base for the review. Because of the length of this summary, it is available separately at http://www.diabeteseducator.org/Professional Resources/Research/Results.html. This detailed table of methodologies and findings of individual articles should be useful for those seeking to pursue these issues in greater detail. The current review presents highlights, conclusions where possible, and suggestions for future research and practice.
Whether more complex diabetes regimens reduce quality of life also receives mixed support. Several studies have indicated negative impacts on quality of life of complex treatments such as hemodialysis, but others indicate no relationship between type of treatment and quality of life. For example, the Diabetes Control and Complications Trial found no ill effects of its intensive therapy on quality of life. Two other reports including a review and an individual study also found no impact of intensive treatments on quality of life. In contrast to negative effects, some reports indicate benefits of intensive interventions, including pancreatic transplants.

Among children, one study found a tendency toward greater recalcitrance among those treated with continuous insulin infusion as opposed to conventional therapy. If adolescents were given their choice of either multiple daily injections or insulin infusion pump methods, quality of life improved.

Impacts of other technical enhancements of treatment have included improved quality of life but deteriorated metabolic control in several studies of an insulin pen, and improvements in both metabolic control and quality of life with insulin glargine.

That individuals differ in their reactions to insulin therapy is revealed in qualitative studies. Patterns that have been identified include (1) positive attitudes centered on efficacy, avoidance of complications, and feeling better and more energetic; (2) anxiety about pain, hassles of injections, a sense of not having taken good care of diabetes, and concerns about hypoglycemia, health problems from insulin, disease progression, and the possibility that treatment had failed; or (3) rigidity, insecurity, conformity, fear of addiction, and doubts about the therapy.

That metabolic control itself may enhance quality of life found support in a randomized trial of glipizide. Although it included no psychosocial or educational intervention other than the support of participants that is implicit in a clinical trial, improved metabolic control was associated with improved quality of life. However, healthy coping may have more impact on quality of life than metabolic control. One study showed that coping styles and personality factors were stronger predictors of quality of life than were clinical aspects of diabetes.

Impacts of Psychosocial Issues on Metabolic Control

The influences of psychosocial and family factors on metabolic control have long been the subject of research,
especially among children and youth with type 1 diabetes. At the individual level, external locus of control, delayed intellectual and emotional development, impulsive and avoidant coping styles, and number of life events have been associated with poorer metabolic control. In addition, literature reviews have indicated that emotional factors, depression, motivational factors, and specific problems such as eating disorders may compromise adherence. At the family level, poor communication, low socioeconomic status, low financial resources, and family stress are associated with lower diabetes knowledge and problem-solving knowledge.

More articles in this review identified characteristics associated with adherence and good metabolic control than with poor control. Factors associated with good metabolic control include internal locus of control; coping that is task oriented, problem focused, or rational (in contrast to a wish-fulfillment coping style); support from friends; positive orientation; and making use of past experience to guide management efforts. That basic cognitive ability may underlie some of these relationships is suggested by associations of both metabolic control and hyperglycemia with neuropsychological and intelligence test indicators of problem-solving ability among adults with type 1 diabetes. It is important to note, however, that relationships of psychosocial factors with metabolic control may be complicated. For example, adolescents have greater problem-solving ability than do children, yet they make more choices that are in line with peer preferences than do younger children.

Part 2: Specific Problems for Coping

Coping and Psychological Challenges Associated With Special Problems

A complete review of the psychological and coping challenges posed by complications is beyond the scope of this article. However, several are highlighted here because of their close relationship with coping and their role in quality of life. Impotence is estimated to be as high as 3 times more prevalent among men with diabetes than among nondiabetic men or as high as 90% prevalent in a population study of diabetic men between 40 and 79 years old in Japan. The present review identified no articles addressing coping and sexual dysfunction among women with diabetes, an apparent oversight in the literature.

As more individuals with diabetes live longer lives, as we learn more about brain and cognitive function across the life span, and as we understand better the relationship between metabolism and cognitive function, our attention to the cognitive impacts of diabetes is likely to grow. Declines in cognitive function have been associated with duration of diabetes, not being on hypoglycemic therapy, and several other complications (proliferative retinopathy, peripheral neuropathy, and peripheral vascular disease), all suggesting a general relationship between adequacy of metabolic control and cognitive decline. Several studies have found that declines in diabetes are specific to measures of psychomotor speed and psychomotor efficiency. A case-control study of those with type 1 diabetes found a positive relationship between history of severe hypoglycemia and neuropsychologic impacts. Another study found no such relationship, but this was based on retrospective reports of youth and their parents.

Depression: Epidemiology and Needs Assessment

Among those with diabetes, estimates of the prevalence of depression range from 28% to 44% for self-reported minimal-mild depression. Studies also indicate associations between depression and poor metabolic control. The relationship is not one way; there is increasing evidence that depression may be part of prediabetes or may participate in pathogenesis. That the relationship between depression and diabetes may be multidirectional was shown in a study of older adults admitted to a psychiatric ward for depression; diabetes and cardiovascular disease were each present in 87% of the sample.

That social as well as physiological factors influence the relationship between diabetes and depression is demonstrated in observed variation among adults with diabetes sampled from the Netherlands, Croatia, and United Kingdom. The prevalence of depression ranged from 19% among English men to 39% among Croatian men and English women.

A high rate of recurrence is a feature of depression, as high as 92% over 5 years in one follow up of participants in a treatment study. The importance of ongoing support for healthy coping and diabetes management is underscored by the fact that none of the participants were treated continuously and prophylactically during follow-up.
Other Emotional Issues: 
Epidemiology and Needs 
Assessment

The current review identified no evidence for a diabetic personality, either as the result of diabetes or as a contributor to its pathogenesis. Supporting the general debunking of the myth of the diabetic personality, one article compared adults with rheumatoid arthritis, osteoarthritis, and diabetes on measures of coping, self-appraisal, and activity levels and found no patterns distinctive to diabetes.

Although there is no diabetic personality, substantial literature links diabetes and its treatment with various emotions. General reviews have shown a wide range of associations of diabetes and its complications with many different emotions and quality of life. Among children and adolescents with diabetes, research has examined internalizing problems such as anxiety, social withdrawal, or depression; tendencies to attribute events to external rather than personal or internal factors; frequency of adverse life events; and eating disorders. Suggestions for treating eating disorders include vigilance by primary care providers and multidisciplinary treatment including the primary care provider, a nutritionist, and a mental health professional. Eating disorders have been associated with insulin omission among those with type 1 diabetes and with excessive concerns for thinness among those with type 2 diabetes and with problems of mother-daughter communication around emotional issues.

Although better metabolic control and fewer complications appear related to better quality of life, the relationship between adherence and quality of life may not always be positive. Among adolescents with type 1 diabetes, emotional distress was associated with being “quiet, nonrebellious . . . [and] . . . with well controlled diabetes from . . . supportive famil[i]es.” Number of snacks was associated with a higher level of both physical and social functioning on the SF-36. The authors of the latter study concluded that “constant attendance” through strict self-control may be associated with poorer quality of life.

The impact of diabetes on the family and of the family on diabetes has long been of interest. That these impacts may not always be profound is suggested by a finding that 4 weeks after their diagnosis with type 1 diabetes, children and their parents reported low distress and did not differ from a reference group in psychological problems. Both mothers and fathers of children with type 1 diabetes reported positive reappraisal of stressors and seeking social support as frequent problem-solving strategies; however, mothers reported planful problem-solving approaches more than fathers did, and fathers reported emotional distancing from problems more than mothers did.

An association between schizophrenia and risk of diabetes appears attributable to weight gain as a side effect of antipsychotic medications, raising cautions about antipsychotic medications for those with or at risk for diabetes.

Assessment of Psychosocial Issues

In addition to general measures of psychological well-being and quality of life (e.g., WHO QOL-100, SF-36 general quality-of-life measure, CES-D depression scale of the Centers for Epidemiologic Studies), a wide variety of instruments are now available for measuring emotional and quality-of-life impacts of diabetes among children and youth as well as adults. Additional measures assess strategies for coping with barriers to adherence to diet, exercise, and glucose testing as well as both self-efficacy and coping related to dietary adherence. Another instrument measures receipt of supports for self-management and other key components of Wagner’s chronic care model.

Part 3: Interventions to Promote Healthy Coping

Table 1 includes descriptions of key articles documenting interventions to promote healthy coping. As noted earlier, the Summary of Healthy Coping Evidence at http://www.diabeteseducator.org/ProfessionalResources/Research/Results.html provides descriptions of all 186 articles on which this review is based.

The American Association of Diabetes Educators has advanced the centrality of healthy coping in all diabetes self-management and patient education to help individuals and families cope with the challenges posed by diagnosis, the complexity of the regimen, demands of self-management, and the need for social support. As a result of this kind of vision, diabetes self-management education, as well as a variety of supportive interventions, have incorporated healthy coping and have included related measures in their evaluation.
Table 1

Summaries of Key Intervention Articles Cited in the Text

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study Objectives and Methods</th>
<th>Study Design</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Trento et al (2004)</td>
<td>Compared group visits to individual care; 120 patients with type 2 diabetes randomized to group or individual care and followed for 5 y</td>
<td>Randomized trial</td>
<td>Quality of life, knowledge of diabetes, problem solving, and body mass index improved in group and worsened in individual care. Glycated hemoglobin (GHb) was stable in group and worsened in individual care.</td>
</tr>
<tr>
<td>Fedder et al (2003)</td>
<td>Evaluation of community health worker intervention among low-income, African American adults receiving Medicaid and with type 2 diabetes; alternate weekly phone contacts and home visits to promote adherence to therapy, self-management, and regular primary care</td>
<td>Pre-post within-group comparison</td>
<td>Reduced emergency care, hospital admissions, and Medicaid costs with an average savings of $2245 per patient per year. Increased quality of life.</td>
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<tr>
<td>McMurray et al (2002)</td>
<td>Evaluated education program in dialysis unit with care manager follow-up including self-management education, monitoring, encouragement, and foot checks among 83 adults receiving care through dialysis unit</td>
<td>Randomization by day of scheduled treatment</td>
<td>Foot risk scores worsened in controls but were stable in those receiving education program. No amputations in those receiving education versus 5 among controls. Diabetes-related quality of life improved in those receiving education relative to controls.</td>
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<tr>
<td>Bott et al (2000)</td>
<td>Evaluated 5-d, intensive, small-group inpatient education program with individual counseling for type 1 patients on intensified insulin regimens; evaluation of 76 of first 83 participants after 17.5 mo</td>
<td>Pre-post evaluation</td>
<td>No improvement in GHb (mean = 8.0 at follow-up) but reduced incidence of severe hypoglycemia, improved self-efficacy and perceived relationship with physicians, and reduced feelings of external control.</td>
</tr>
<tr>
<td>Testa and Simonson (1998)</td>
<td>Evaluated impacts of improved glycemic control in comparison of glipizide to placebo among 569 volunteers with type 2 diabetes</td>
<td>Randomized double-blind, placebo-controlled trial</td>
<td>Relative to placebo, glipizide showed improvement in symptom distress, emotional health, depression, disorientation and detachment, vitality, general perceived health, cognitive functioning, and general quality of life. Glipizide also showed advantages in terms of retained employment, productive capacity, absenteeism, bed days, and restricted activity.</td>
</tr>
<tr>
<td>Langewitz et al (1997)</td>
<td>Evaluated impacts of training in intensified insulin therapy among adults with long-standing type 1 diabetes</td>
<td>Pre-post within-group evaluation</td>
<td>Improved GHb as well as reduced dissatisfaction with life, increased moments free of disease-specific strain, and reduced anxiety and depression.</td>
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</table>
### Diabetes Control and Complications Trial Study Group (1996)\(^{32}\)

Evaluated the possibility of negative effects on quality of life from the increased rigor of care posed by intensive insulin treatment regimens in the Diabetes Control and Complications Trial.

#### 8. Support groups and group counseling

<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
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<tbody>
<tr>
<td>Karlesen et al (2004)(^{110})</td>
<td>Group cognitive-behavior therapy led by nurses for adults with type 1 or type 2 diabetes. Included cognitive restructuring, problem solving, modeling, social support, and reinforcement. Focused on sources of diabetes stress and active coping responses.</td>
</tr>
<tr>
<td>Toth and James (1992)(^{111})</td>
<td>Qualitative study of topics discussed and patient information needs expressed by adults with insulin-dependent diabetes in support group. Support group led by a physician and a social worker. Topics discussed were driven by the group.</td>
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#### 9. Problem-solving and coping skills

<table>
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<tr>
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<tbody>
<tr>
<td>Hill-Briggs et al (2003)(^{31})</td>
<td>Examined diabetes-related problem solving in a focus group of urban African Americans in good control and a separate group of those in poor control. Interview questions addressed problem-solving orientation and process and transfer of past experience.</td>
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Randomized multicenter controlled trial

Randomized to intervention or wait list

Qualitative description/case study

Qualitative focus groups

Found no differences between intensive and conventional treatments for type 1 diabetes on a variety of measures of quality of life, including Symptom Checklist-90R, Medical Outcomes Study SF-36, and a measure of diabetes-specific quality of life.

Diabetes-related stress and self-blame were significantly reduced in the intervention group compared with the control group at 6-mo follow-up. Problem-focused coping, emotion-focused coping, and psychological well-being did not differ between groups. Outcomes in intervention group did not change from 6- to 12-mo follow-up.

Complications, fears regarding complications, diet, and relationships with physicians were most commonly discussed. Other topics discussed included difficulties achieving disease control, family relationships, devices for daily management, pregnancy, parenting, depression, eating disorders, occupation concerns, and driving with diabetes.

Types of problems in each group were similar, but those in good control expressed positive orientation toward self-management and problem solving, rational problem-solving process, and positive transfer of past experience. Those in poor control expressed negative orientation, careless and avoidant problem-solving processes, and negative transfer of past learning to new experiences.
Examined whether adolescents with type 1 diabetes can become better problem solvers and improve metabolic control; 53 adolescents randomly assigned to 6-wk problem-solving diabetes education program or usual-care control group

Compared those with type 1 diabetes and in good control (GHB <7.5%) with those in poor control (GHB >8.5%) regarding demographic and psychosocial factors

Examined 2-wk summer school program combining problem-based learning with behavior therapy to help adolescents with insulin-dependent diabetes improve ability to cope with dietary management; 10 students were in the first session, and 9 others were waiting-list controls

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Table 1 (continued)

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<tbody>
<tr>
<td>Cook et al (2002)</td>
<td>Examined whether adolescents with type 1 diabetes can become better problem solvers and improve metabolic control; 53 adolescents randomly assigned to 6-wk problem-solving diabetes education program or usual-care control group</td>
<td>Randomized controlled trial</td>
<td>Intervention group showed improved problem-solving test scores and GHB from baseline to 6 mo, but control group did not. At 6 mo, the intervention group did blood glucose testing more often than the control group did, but there were no significant differences between groups in problem-solving test scores or GHB. No differences observed for demographic characteristics, duration of diabetes, or nature of diabetes-related stressors. Those in good control practiced more frequent home glucose monitoring and reported greater use of task-oriented coping strategies.</td>
</tr>
<tr>
<td>Hartemann-Heurtier et al (2001)</td>
<td>Compared those with type 1 diabetes and in good control (GHB &lt;7.5%) with those in poor control (GHB &gt;8.5%) regarding demographic and psychosocial factors</td>
<td>Cross-sectional, convenience sample</td>
<td>At 6 mo, advantages of those in coping skills training included better metabolic control (P = .02), general self-efficacy (P = .001), less negative impact of diabetes on their quality of life (P = .01), and fewer worries about diabetes (P = .02). At 1 y, those in coping skills training had lower GHB (P = .001), better diabetes (P = .002) and medical (P = .04) self-efficacy, and less impact of diabetes on quality of life (P = .005). Intervention decreased the incidence of weight gain (P = .05) and hypoglycemia (P = .03) in females.</td>
</tr>
<tr>
<td>Grey et al (1999), Grey at al (2000)</td>
<td>77 patients (43 females, 95% white) aged 12 to 20 y beginning intensive insulin training randomly assigned to intensive diabetes management alone or that combined with coping skills training; coping skills training focused on problem solving, communication, cognitive-behavior modification, and conflict resolution</td>
<td>Randomized controlled trial</td>
<td>Improvements occurred in self-efficacy, problem-solving skills, and self-reported coping strategies. No significant differences seen in daily intake of fat, cholesterol, calories, mean blood glucose levels or blood glucose variability, and diabetes knowledge.</td>
</tr>
<tr>
<td>Schlundt et al (1999)</td>
<td>Examined 2-wk summer school program combining problem-based learning with behavior therapy to help adolescents with insulin-dependent diabetes improve ability to cope with dietary management; 10 students were in the first session, and 9 others were waiting-list controls</td>
<td>Waiting-list control</td>
<td>Those in the coping skills intervention had lower GHB and better diabetes self-efficacy, found it easier to cope with diabetes, and reported less of a negative impact of diabetes on quality of life than those in control group.</td>
</tr>
<tr>
<td>Grey at al (1998)</td>
<td>65 youths (aged 13-20 y) beginning intensive insulin therapy randomly assigned to intensive diabetes management alone or combined with coping skills; coping skills training focused on social problem solving, social skills, cognitive behavior modification, and conflict resolution</td>
<td>Randomized controlled trial</td>
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Assessed coping styles, social support, and health status among 51 participants in a diabetes education program

Didjureit et al (2002) 121
14-wk one-on-one, weekly problem-focused psychotherapy focusing on fostering awareness, modification of thought patterns, modification of behavior, emotionality, body awareness, ability to relax, and support; participants had diabetes and a self-reported psychological problem as well as previous self-management education

Surwit et al (2002) 125
Examined whether stress management improved glucose metabolism; 108 participants randomized to 5-session education program with and without stress management

Hains et al (2001) 129
Examined impact of a cognitive-behavioral intervention including cognitive restructuring and problem solving delivered via 8 individual sessions for 6 adolescents with anxiety, anger, or diabetes stress

Better health associated with support from friends and reliance on problem solving-based coping strategies. Poorer health associated with wish-fulfillment coping style. Men reported greater family support, were more likely to employ problem-focused coping, and were healthier than women. Women were more likely to use wish-fulfillment and detachment coping styles.

Ratings of psychological problem severity as well as GHb decreased more in the intervention group than in the control group. Changes in other psychological outcomes did not differ significantly across the intervention and control groups.

Several studies of cognitive-behavior therapy adapted for children with diabetes, particularly those that involve the family, have improved psychosocial outcomes as well as metabolic control. Review emphasizes importance of adapting cognitive-behavior therapy to specific needs of population treated.

Stress management was associated with small (0.5%) but significant reduction in GHb. Compliance with the regimen decreased over time. Trait anxiety did not predict response to treatment.

Four youths had some improvement on 1 or more variables for which they had elevated levels at baseline, while there was no impact on the other 2 variables.
Table 1 (continued)

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<tr>
<td>Hains et al (2000)</td>
<td>Examined effectiveness of stress management training for distressed adolescents with type 1 diabetes; 8 of 14 participants were assigned to intervention of six 1-h small-group sessions on cognitive restructuring and problem solving; remaining 6 assigned to wait-list control group</td>
<td>Pre-test-posttest with waiting-list control</td>
<td>Within-group comparisons showed improvements in the training group on pretest to posttest and pretest to follow-up for anxiety, stress, and coping measure. There were no differences between the training and control group at posttest and follow-up, but a small sample size may have precluded significant results.</td>
</tr>
<tr>
<td>Lustman et al (1998)</td>
<td>Assessed cognitive-behavior therapy for depression in patients with type 2 diabetes; half of the 51 patients receiving diabetes education were randomized to an additional 10 wk of individual cognitive-behavior therapy</td>
<td>Randomized controlled trial</td>
<td>Remission of depression (&lt;10 on Beck Depression Inventory) greater in cognitive-behavior therapy group (85%) than in the control group (27.3%, P &lt; .001). At follow-up, 70% of cognitive-behavior therapy and 33.3% of control patients were remitted (36.7% difference, confidence interval, 9 to 65 percentage points, P = .03). GHb at posttreatment did not differ but at follow-up was better in cognitive behavior therapy (P = .03).</td>
</tr>
<tr>
<td>Zettler et al (1995)</td>
<td>Tested behaviorally oriented group therapy (n = 17) for fear of long-term complications; included exposure in imagination, relaxation, and identifying dysfunctional health beliefs</td>
<td>Pre-post single group</td>
<td>Relative to pretreatment, fear, acceptance of chronic disease, and work improved at posttreatment and 3-mo follow-up.</td>
</tr>
<tr>
<td>Lane et al (1993)</td>
<td>Tested biofeedback-assisted relaxation training in type 2 diabetes; 38 participants received intensive conventional diabetes therapy, after which half received relaxation training</td>
<td>Randomized controlled trial</td>
<td>All patients improved in GHb but not glucose tolerance after 8 wk of conventional treatment. Group that received biofeedback relaxation training showed no additional benefit on either measure.</td>
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11. Family therapy

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<th>Findings</th>
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<tr>
<td>Harris et al (2005)</td>
<td>Ten 90-min sessions of in-home behavioral family systems therapy including problem solving, communication skills, cognitive restructuring, and family therapy. Participants were 18 adolescents aged 13-18 y with poorly controlled diabetes.</td>
<td>Within-subjects, single-group design</td>
<td>Improvements in family conflict and behavior problems seen immediately following intervention but no improvements in any outcomes 6 mo following completion of the intervention.</td>
</tr>
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</table>
patients followed for 9 mo and assigned to multisystemic therapy or usual care for first 6 mo.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Design</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ellis et al (2005)</td>
<td>Evaluated effects of multisystemic therapy on stress, metabolic control, and hospitalizations; 127 with GHb 8% randomized to therapy or usual care and treated for 6 mo with evaluation at 7 mo</td>
<td>Randomized controlled trial</td>
<td>Treatment resulted in reduced stress, improved GHb, and reduced hospitalizations relative to controls. Structural equation modeling indicated that reductions in GHb were mediated not by stress reduction but by effects of treatment on adherence.</td>
</tr>
<tr>
<td>Wysocki et al (2000)</td>
<td>Office-based behavioral family systems therapy includes problem solving, communication skills, cognitive restructuring, and family therapy; 119 adolescents aged 12-16 y, 75 with insulin-dependent diabetes mellitus (and their families) randomized to behavioral family systems therapy, an education and support group, or current therapy; follow-up at 3, 6, and 12 mo</td>
<td>Randomized controlled trial</td>
<td>Mixed results of intervention relative to controls indicating reduced overt parent-adolescent conflict at 3 and 6 mo, reduced diabetes-related conflict, and improved adherence that emerged at 6 and 12 mo but no benefit for adjustment to diabetes or metabolic control. Boys receiving family systems therapy showed improved adjustment compared with both control groups, but girls receiving family systems therapy showed decreased adjustment compared with controls. Family systems therapy also received higher social validity scores (acceptability, applicability, and effectiveness) from families than the education and support groups did.</td>
</tr>
<tr>
<td>Ryden et al (1994)</td>
<td>Family therapy included problem identification and problem solving, compared with pediatric support (intensive family education from physician) among 15 children with insulin-dependent diabetes and poor control</td>
<td>Randomized controlled trial</td>
<td>Improvements in diabetic control, behavioral problems, and self-esteem were greater for children in the family therapy condition compared with the pediatric support condition; however, formal tests of statistical significance were not presented.</td>
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12. Medication for psychological problems

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Design</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Svacina (2005)</td>
<td>Evaluated the effects of antidepressant treatment on 100 individuals in treatment of obesity or type 2 diabetes and also manifesting depression, 41 of whom were treated with antidepressants</td>
<td>Case observation</td>
<td>Antidepressant treatment (bupropion and tianeptine) was associated with weight loss and increased pharmacotherapy adherence.</td>
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(continued)
Table 1 (continued)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study Objectives and Methods</th>
<th>Study Design</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Williams et al (2004)148</td>
<td>Evaluated effects of education, problem-solving treatment, or support for antidepressant management for depression in older adults with diabetes and depression. Participants were 417 patients with diabetes out of 1801 subjects aged 60 years or older with depression.</td>
<td>Preplanned secondary analyses of randomized, controlled trial</td>
<td>Individuals with diabetes assigned to the intervention group had less depression and larger improvements in overall functioning at 12 mo, relative to controls. Exercise increased in the intervention group. Self-care and GHb were unaffected by the intervention.</td>
</tr>
<tr>
<td>Spolestra et al (2004)94</td>
<td>Evaluated whether antipsychotic medication worsened GHb control. Data were from a large Dutch panel of 2585 individuals with type 2 diabetes. Initiation of insulin treatment was interpreted as a sign of worsening condition.</td>
<td>Cohort study</td>
<td>Those taking antipsychotic medications had twice the hazard of insulin initiation relative to those not taking such medications.</td>
</tr>
<tr>
<td>Cheer and Goa (2001)140</td>
<td>Reviewed evidence regarding efficacy of fluoxetine in treating depression associated with physical illnesses</td>
<td>Review</td>
<td>Fluoxetine has outperformed placebo in treating depression among individuals with diabetes.</td>
</tr>
</tbody>
</table>

13. Other interventions

| Takii et al (2003)131      | Evaluated integrated inpatient therapy for bulimia nervosa among women with type 1 diabetes. Intervention included recovery period, behavioral training, and restoration of family relationships (including family therapy). | Comparison with those declining inpatient therapy | Inpatients improved on all psychological and behavioral measures (eating disorder psychopathology, depression, anxiety, frequency and amount of binge eating, purging behaviors), and 78% no longer met criteria for an eating disorder. Non-inpatients showed no significant improvement on these same outcomes. |
| McGrady and Horner (1999)238 | Twelve 45-min sessions of biofeedback-assisted relaxation (autogenic phrases and diaphragmatic breathing and feedback about forehead muscle tension and temperature of the index finger). All participants received blood glucose monitoring supplies and educational video prior to randomization to biofeedback or wait list. | Randomized comparison to wait-list control | Those receiving biofeedback had decreases in trait anxiety, decreases in muscle tension, and increases in temperature, while the control group did not. Metabolic control, state anxiety, depression, and intensity/frequency of hassles were not differentially affected by intervention condition. |
| Fosbury et al (1997)145    | Adults with type 1 diabetes were randomized to diabetes specialist nurse education or cognitive-analytic therapy, which is a time-limited (16-20 sessions) psychotherapy integrating psychoanalytic and cognitive/behavioral therapy by identifying new approaches to thinking about past problems. | Randomized controlled trial  | Cognitive-analytic therapy improved interpersonal problems significantly more than control treatment did. Metabolic control and diabetes knowledge did not change differentially between groups. |
Inpatient medical care and psychoanalytic therapy delivered 3 to 5 times per wk for 5 to 28 wk (mean = 15 wk) for 11 children (aged 6-18 y) with brittle, poorly controlled diabetes. Comparison group had the same characteristics but were admitted to other pediatric inpatient wards receiving usual care, patient education, and encouragement of adherence from ward staff.

Comparison group had mean inpatient stay of 3 wk in comparison to 15 wk in psychoanalytic treatment. Metabolic control improved to a greater extent in the group receiving psychoanalytic therapy compared with the group receiving only medical care, and these improvements were sustained at 1-y follow-up.

**14. General issues in promoting healthy coping**

<table>
<thead>
<tr>
<th>Study</th>
<th>Research Design</th>
<th>Summary</th>
</tr>
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<tbody>
<tr>
<td>Ciechanowski et al (2006)</td>
<td>Evaluated moderating role of patient relationship style in success of Pathways randomized trial of collaborative care for depression including outreach, support for use of antidepressant medication, and problem-solving counseling delivered by nurses</td>
<td>Internal analysis of randomized trial</td>
</tr>
<tr>
<td>Katon et al (2006)</td>
<td>Among 418 participants with both depression and diabetes, evaluated Pathways program of collaborative care for depression including outreach, support for use of antidepressant medication, and problem-solving counseling delivered by nurses</td>
<td>Subgroup analyses of data from randomized clinical trial</td>
</tr>
<tr>
<td>Lin et al (2006)</td>
<td>Assessed effects of depression interventions on self-management among depressed diabetic patients; 29 patients randomized to usual care or collaborative depression treatment including medication, problem-solving counseling, or both</td>
<td>Randomized clinical trial</td>
</tr>
<tr>
<td>Zoffman and Kirkevold (2005)</td>
<td>Grounded theory study of 11 patients with poor diabetes control and their relationships with their physicians</td>
<td>Qualitative, grounded theory study of case series</td>
</tr>
</tbody>
</table>

Among those receiving intervention, those with independent style received more problem-solving treatment sessions. Among those with independent relationship style, intervention associated with greater satisfaction with treatment and more depression-free days. Among those with interactive relationship style, no differences between treatments on satisfaction with care or depression outcomes. Intervention participants experienced more depression-free days over a 2-y period, which resulted in lower outpatient care costs.

Assessments at baseline and 3, 6, and 12 mo indicated intervention did not produce improved diabetes self-care behaviors except for small differences “of limited clinical importance.”

Among both patients and providers, problem solving was restricted by pattern of viewing life and disease as separate. This pattern was influenced by 3 approaches to problem solving: compliance expecting and failure expecting that sustained the pattern and mutuality expecting that neutralized it.
Among patients with diabetes and comorbid major depression identified by the survey (Patient Health Questionnaire), examined health maintenance organization automated data indicative of recognition and care for depression in preceding 12 mo.

Survey of patients' and general practitioners' perceptions of patients' psychological and information needs following diagnosis.

Review of psychological intervention trials for children and adults with type 1 diabetes. Included only randomized controlled trials. Interventions for children included group cognitive-behavior therapy, individual counseling, and family therapy. Interventions for adults included cognitive-behavior therapy or psychodynamic therapy.

Review of psychological intervention trials for adults with type 2 diabetes. Interventions included supportive or counseling therapy and cognitive-behavior therapy. Included only randomized controlled trials.

Systematic, qualitative review of interventions for people with diabetes and 1 of 5 psychological conditions (depression, stress and anxiety, eating disorders, self-destructive behaviors, and interpersonal/family conflicts).

Major depression had been recognized for about 51%. Patients who were female, dysthymic, had panic attacks, were in poor health, and had more than 7 health visits were most likely to be recognized as depressed. Recognition resulted in medication for depression in 43% but more than 4 psychotherapy sessions in only 6.7% of cases.

Sixty percent of patients reported that diagnosis had been distressing, and 23% wanted more emotional support. Practitioners overestimated the percentage of patients concerned with complications. Patients preferred diabetes educators and courses as sources of information. Suggest clinicians individualize informational and emotional support at diagnosis and increase patient involvement in discussions at this time.

Found significant decreases in psychological distress among children and adolescents but not for adults. Authors noted that control for bias and sample size in these studies was less than ideal.

Found significant decreases in psychological distress. Authors noted that control for bias and sample size in these studies were less than ideal.

Few randomized controlled trials or interventions for stress or anxiety identified. Cognitive-behavior therapy effective in improving psychological and metabolic outcomes for patients with depression, binge eating, and self-destructive behaviors. Behavioral family therapy also effective in reducing conflict but not improving metabolic control.

*Summary of all articles on which the review is based is available at [http://www.diabetesseducator.org/ProfessionalResources/Research/Results.html](http://www.diabetesseducator.org/ProfessionalResources/Research/Results.html).
Healthy Coping in Diabetes Self-management Education

A number of studies suggest that general approaches to self-management training appear to benefit quality of life. These include a case study of 20 years’ use of intensive insulin administration and evaluations of group medical visits, community health workers, an education program for dialysis patients, and telephone support for adolescents and young adults with type 1 diabetes.

In addition to inclusion of healthy coping in general diabetes self-management education, research has examined the benefits for diabetes management of a number of individual, group, and family interventions. Reviews of psychological interventions for individuals with type 1 diabetes and adults with type 2 diabetes found them to achieve significant decreases in a variety of measures of psychological and psychosocial distress.

Support Groups/Group Counseling

Surprisingly, the review identified few studies evaluating support groups for those with diabetes. One study found that relative to a wait-list control group, those receiving group cognitive-behavior therapy experienced reduced diabetes-related stress and self-blame but, surprisingly, achieved no differences on overall psychological well-being. A qualitative description of a support group emphasized the importance of group members’ being able to raise topics for group discussion, a common practice in support groups for those with chronic illnesses.

Problem Solving and Coping Skills

Problem solving is a common ingredient in a variety of patient education, self-management, and healthy coping interventions. Reviews have suggested that teaching coping and problem-solving skills may improve quality of life and diabetes management. This is supported by a separate article in this issue by Hill-Briggs and Gemmell that provides a detailed review of problem-solving interventions for those with diabetes. It found (1) consistent relationships between measures of problem solving and measures of quality of life and metabolic control among adults and mixed evidence among youth, (2) good evidence for benefits of problem-solving interventions on quality-of-life measures, and (3) mixed results for improved metabolic control. Several articles identified in the present review found improvements in reported problem-solving skills, self-management patterns, adherence, quality of life, and GHb at follow up as long as 1 year after the intervention.

Problem solving has also been recognized as a key ingredient in psychotherapy. Individuals receiving problem-focused psychotherapy concentrating on modification of thought patterns, behavior, and emotionality as well as on relaxation and social support achieved improvements in psychological problem severity and GHb, in comparison to a wait-list control group.

Cognitive-Behavior Therapy and Behavior Therapy Interventions

Several reviews concluded that cognitive-behavioral interventions have benefits on mood and GHb, showing promise of improvements in course and outcome. A randomized trial compared patient education alone with patient education followed by 10 weeks of individual cognitive-behavior therapy. Cognitive-behavior therapy achieved greater remission of depression and lower GHb. Other findings of studies of behavioral approaches to healthy coping have included (1) small reductions of GHb through stress management intervention and (2) improvements in fear, acceptance of chronic disease, and improved work experience through an intervention that used several cognitive-behavioral strategies in improving dysfunctional health beliefs but (3) little benefit from biofeedback-assisted relaxation despite suggestions of its usefulness.

Among adolescents, cognitive-behavioral and problem-solving interventions have shown mixed results, including reduced anxiety and stress, improved coping, and improved adherence but no improvements in diet, physical activity, or GHb and, in another study, no differential benefits.

Family Therapy

Family approaches to youth with type 1 diabetes have shown promising effects on family communication, problem solving, and clinical outcomes. These approaches include behavioral family systems therapy that focuses on problem-solving skills, communication skills, cognitive restructuring, and general family counseling. Multisystemic therapy adds intensity of intervention (2 to 3 home visits per week at outset, average duration = 6.5 months) and additional targeting of peer, school, and community settings. An in-patient approach...
program that focused on family relationships and behavioral interventions also achieved improvements in binge eating and purging among a series of cases with both bulimia and diabetes.\textsuperscript{138}

Research on family interventions points to the apparent utility of focusing on family factors long shown to be associated with diabetes management among youth.\textsuperscript{48,49} However, follow-up assessments have either not been conducted or have shown that benefits dissipate relatively quickly, suggesting the importance of ongoing follow-up and support.\textsuperscript{79}

\section*{Medication for Psychological Problems}

A randomized comparison to placebo\textsuperscript{139} indicated benefits of sertraline for depression among adults with diabetes but no differential benefit on GHb. A review\textsuperscript{140} found that fluoxetine is superior to placebo among those with diabetes and depression. In a series of cases with depression and also diabetes or obesity, antidepressant treatment with bupropion and tianeptine was associated with weight loss and increased pharmacotherapy adherence.\textsuperscript{141}

\section*{Other Interventions}

Several studies have examined mixtures of psychotherapeutic approaches. Inpatient medical management and psychoanalytic therapy 3 to 4 times per week for 5 to 28 weeks achieved improved metabolic control maintained at 1-year follow-up among children with type 1 diabetes.\textsuperscript{142,143} In another study, inpatient care including individual, group, and family psychotherapy was associated with improvements in hospitalizations, school attendance, metabolic control, weight gain, changes in insulin, knowledge about diabetes, and attitudes toward diabetes.\textsuperscript{144} However, both studies included nonequivalent controls or no controls, rendering them essentially a series of case studies.

Cognitive-analytic therapy identifies past problems and new approaches to thinking about them. Among adults with type 1 diabetes, such therapy led to improvements in interpersonal problems but no advantage in terms of metabolic control.\textsuperscript{145}

Finally, diabetic ketoacidosis has been examined in several case studies. Inpatient psychotherapy and intensive supervision of insulin administration led to reversal of self-destructive patterns,\textsuperscript{146} and outpatient group therapy for up to 24 months achieved improvements in adherence, weight gain, self-reliance, and trust among 4 adolescents.\textsuperscript{147}

\section*{Strategies in Promoting Healthy Coping}

The Pathways project of Katon and colleagues at Group Health Cooperative of Puget Sound demonstrates a comprehensive approach to addressing depression and emotional issues in primary care. Set within a large health maintenance organization, Pathways is a case management program that includes support of medication treatment and adherence as well as counseling emphasizing problem solving.\textsuperscript{148} Benefits included adequacy of pharmacotherapy doses, reduced depression, satisfaction with care, improvements in overall functioning, and exercise. However, treatments were not found to benefit GHb or self-care behaviors.\textsuperscript{149,150}

The need for healthy coping is substantial and continuing rather than occasional. This was reflected by the breadth of issues that were identified by participants in one support group: family relationships, parenting issues, depression, eating disorders, occupational concerns, driving with diabetes, management issues, and pregnancy.\textsuperscript{111} Thus, healthy coping should be part of regular diabetes care. This is reflected in calls for inclusion of measures of quality of life and emotional health in studies of diabetes management\textsuperscript{116,151} and calls for routine engagement of the family and attention to child-family dynamics as part of treatment for children and youth.\textsuperscript{152,153}

Despite advocacy for its role, healthy coping receives little attention in routine care. In one study, 23\% of patients reported having wanted more emotional support than they received at the time of diagnosis.\textsuperscript{154} In another study, only 51\% of patients who scored as depressed on the Patient Health Questionnaire (PHQ-9) had been recognized as such by their care providers.\textsuperscript{155} Furthermore, only 43\% of those recognized as depressed received medication for depression, and only 6.7\% received appreciable psychotherapy (4 or more sessions). The limited attention to healthy coping is part of a broader trend to underemphasize patient education in diabetes care as 60\% to 70\% of patients report not having received education in diabetes self-management.\textsuperscript{156}

Promoting the centrality of healthy coping in diabetes management needs to take note of complex factors that will govern its acceptance, including patient attitudes toward their own role in self-management and patient-provider
communication. These were illustrated in a qualitative study\textsuperscript{157} of patients in poor control that identified a tendency to keep disease management at a distance from living one’s life. This separation was reinforced by emphases on compliance and expectations of failure in patient-provider communication. In contrast, mutuality between provider and patient and openly addressing the challenge of integrating disease management with the rest of life appeared to promote a more moderate, problem-solving approach.

Summary of Findings

From parts 1 and 2 of this review, it is apparent that
- diabetes influences quality of life,
- the type of diabetes treatment influences quality of life,
- metabolic control influences quality of life, and
- psychosocial factors influence metabolic control.

This leads to several questions regarding healthy coping interventions.

Do Healthy Coping Interventions Improve Quality of Life?

Well-controlled studies (randomized trials, multiple baseline, or other adequate control procedures) indicate improved quality of life following a variety of interventions, including cognitive-behavioral treatment of depression,\textsuperscript{124} coping/problem-solving interventions with adolescents and youth,\textsuperscript{28,117,118,120} as well as adults,\textsuperscript{121} support groups,\textsuperscript{110} cognitive-analytic therapy,\textsuperscript{145} and the Pathways intervention that consisted of coordinated case management, support of medication use, and problem-solving counseling.\textsuperscript{148} Multisystemic therapy\textsuperscript{138,160} and behavioral family systems therapy\textsuperscript{153-155} achieve improvements in family functioning and quality of life, but follow up of multisystemic treatment has not been reported, and 12-month follow up of family systems therapy indicates an appreciable decline in benefits.

A variety of self-management interventions that share support and encouragement along with attention to circumstances and, often, emotional factors that interfere with self-management were found to have quality-of-life benefits in well-controlled evaluations\textsuperscript{104,106,107} and a pre-post, within-group evaluation.\textsuperscript{105}

An observational study indicated quality-of-life benefits of a comprehensive intervention for fear of long-term complications.\textsuperscript{126} One pre-post, within-group evaluation found no benefit of behavioral family systems therapy.\textsuperscript{132}

Do Healthy Coping Interventions Improve Metabolic Control?

Well-controlled studies (randomized trials or other adequate control procedures such as multiple baseline) indicate that improved metabolic control results from cognitive-behavioral interventions for depression,\textsuperscript{124} stress management intervention,\textsuperscript{125} coping/problem-solving interventions with adolescents and youth,\textsuperscript{28,117,118,120} as well as with adults in a wait-list comparison,\textsuperscript{121} multi-systemic therapy,\textsuperscript{158-160} and sertraline.\textsuperscript{119}

Evaluation against a nonequivalent comparison group indicates improved metabolic control following in-patient interventions stressing psychoanalytically oriented psychotherapy.\textsuperscript{142,143} Several studies indicated benefits of antidepressant medication, and a review indicated benefit of fluoxetine.\textsuperscript{140}

Discussion and Conclusions

From this broad review to identify themes and topics worth pursuing in healthy coping, substantial evidence indicates that psychological and behavioral factors are related to metabolic control in diabetes and that a variety of self-management, as well as more psychological interventions such as cognitive behavior therapy, improve both metabolic control and quality of life.

The relationships among self-management, psychological factors, coping, quality of life, and metabolic control are complex. Psychological factors appear related to self-management and metabolic control, metabolic control is related to quality of life, and improving healthy coping skills improves metabolic control and quality of life. Several of these connections are bidirectional. That is, poor quality of life or depression may interfere with management and compromise metabolic control. At the same time, metabolic control may be related to mood and quality of life. An important development in health behavior research and public health has been recognition of interdependent influences among contexts, behaviors, biological variables, health, and quality of life, as opposed to models of unidirectional causation.\textsuperscript{161} Healthy coping in diabetes is an area for which such complex models are especially pertinent.

Previous reviews in this field\textsuperscript{108,109} indicated a variety of methodological concerns including problems with control for bias and sample size. These kinds of problems remain in many of the studies cited here, several of which compare interventions to groups that are not comparable.\textsuperscript{142,143}
However, many of the studies reviewed have used randomized experimental designs or other control designs such as multiple baseline or waiting-list controls. The limited results supporting any one intervention should lead to further research refining and comparing these approaches. The complex issues in this field include what interventions may best reach what groups, how cultural factors may influence quality of life and may make one or another approach to healthy coping more or less appropriate, how coping and biological influences interact in their influence on metabolic control and quality of life, and so forth. Research needs to use a variety of methods including those emphasized in the grading of evidence in the other AADE71 systematic reviews in this special issue.

As survival among those with diabetes is extended, the range and number of complications will increase. This review identified some attention to cognitive decline and impotence, but innovative healthy coping interventions need to be developed or tailored to meet the needs of those facing a growing range of diabetes complications.

Sixty percent to 70% of patients with diabetes have not received training in diabetes self-management.162 This challenge leads to a number of considerations for both practice and research. For program planning, the variety of healthy coping interventions is not a mark of disarray in the field but rather an advantage in reaching those who have not been served. A variety of interventions, channels, and modes of engaging individuals may be more effective in reaching audiences than provision of one or a limited number of best practices.79,163 Thus, program planning should draw from the range of interventions of demonstrated benefit, guided by resources available, organizational strengths vis-à-vis those served, and specific needs and preferences of intended audiences.

Research needs to address how to disseminate these approaches to the large numbers who need them. Because choice among different interventions is likely critical to reaching large numbers, research should investigate programs offering choices. It should also examine how specific interventions contribute to the effectiveness of packages of several intervention types, modes, and channels. It should identify ways of integrating different healthy coping approaches into practice settings to provide a varied, attractive package of services capable of reaching and sustaining involvement of large numbers in need. This research should draw on emerging models for dissemination research.161,164-166 An example of this kind of research is the Pathways intervention, which combined support for medication as well as counseling in problem solving.148,167,168

Behavior changes and improvements in self-management or healthy coping are not self-sustaining. This reflects a broad pattern in behavioral and health behavior research.169-173 That initial benefits may fade by the time of follow-up was a pattern noted in this review.132-135 In addition, the lifelong and progressive nature of diabetes leads to needs for coping with changes both in disease features (eg, the eventual need to use insulin for management) and circumstances (eg, the impact of retirement or widowhood on patterns of daily living including diet and physical activity). Thus, healthy coping and self-management programs need to provide ongoing follow-up and support,70 and research needs to address how to extend interventions for healthy coping into lifelong supports and resources. A promising development is that ongoing self-management support is 1 of 10 standards in the 2007 National Standards for Diabetes Self-management Education.174

A final important topic for research in this area is the cost effectiveness of healthy coping interventions. Although not a focus of this review, healthy coping interventions may be surprisingly cost-effective. A community health worker program that included weekly phone contacts and home visits reduced acute care, increased quality of life, and was reported to save an average of $2245 per patient per year.105 Evaluation of the Pathways comprehensive program for those with depression and diabetes in primary care175 and another similar program168 indicated that costs of treating depression tended to be offset by savings in costs of overall care. In fact, the eventual costs of poor self-management and complications among those with diabetes and, especially, among those with both negative emotions and diabetes may accentuate the cost-effectiveness of healthy coping interventions.168

References


