Introduction to the Behavioral Aspects of Diabetes Mellitus Series

On 20–22 June 1991, in Williamsburg, VA, the Education, and Behavioral Medicine and Psychology Councils of the American Diabetes Association cosponsored a satellite conference to the 14th International Diabetes Federation Meeting. This conference, *Behavioral Aspects of Diabetes Mellitus*, brought together leaders in the field to present scholarly commentaries applicable to clinicians and scientists on the status of behavioral research in the field of diabetes. The meeting was unique because for the first time, internationally recognized experts in the field of behavioral diabetes discussed and presented their research in a large, multidisciplinary forum. A previous conference on behavioral and psychosocial issues in diabetes in May 1979, engaged interested clinicians and researchers from different fields to establish goals and directions for a newly focused research effort on psychosocial aspects of diabetes mellitus. That conference, sponsored by the National Institutes of Health, played a seminal role in stimulating psychological research in diabetes (1). This most recent meeting presented the fruits of those labors.

During the next four regular issues, *Diabetes Care* will publish 10 articles that derive from many of the presentations and workshops first given in Williamsburg. The authors were asked to write papers that are both scholarly reviews and thought-provoking commentaries. This series will provide our readers with an opportunity to assess the important research accomplishments and issues in the field of behavioral diabetes. Not surprisingly, these papers raise new questions even while they resolve others. In some instances, they provide clinicians with clear, new ideas for their work. In other instances, the work underlines the need for additional research to affect the lives of patients with diabetes.

The papers can be clustered loosely into three areas of concern: 1) methodological considerations in behavioral diabetes research, 2) psychosocial effects of diabetes, and 3) the current state of psychosocial interventions in patients with diabetes.

Some papers, such as those by Glasgow and Osteen, and Bradley, raise questions about methods used in behavioral and educational studies. The authors provide pointed commentary about the need for, and possibility of, alternative approaches to research design and outcome assessment for behavioral and educational interventions. Clinical intervention studies typically depend on the gold standard: randomized clinical trials. However, educators in the classroom have recognized that such trials may not always be possible because of feasibility and cost. Thus, educational research sometimes has used quasi-experimental designs to approximate the yield from more traditional clinical trial designs (2). Such quasi-experimental research designs do not require strict procedures for randomization. These approaches can provide useful data that may serve as an important basis for later, fuller, and more expensive clinical trials.

There is increasing recognition that intervention outcomes cannot simply be summarized in a single number, such as a glycosylated hemoglobin. Interventions in the psychosocial and education sphere may influence a range of biological parameters that are important outcomes in themselves without necessarily having an impact on glycemic control. For example, psychosocial interventions may improve adherence to diets that lower cholesterol without necessarily improving glycemic control. Furthermore, patient views of the quality of life are important and valued outcomes from the patient's and family's perspective. Therefore, quality of life is a legitimate target of interest for behavioral interventions in diabetes.

Johnson's paper examines the development of methods of assessment of one critical outcome variable: adherence. Her paper presents a careful review of the issues that underlie the assessment of adherence. She examines the conceptual problems in defining adherence and approaches for measurement.

An ongoing and complex debate exists in diabetes literature about the nature and extent to which diabetes mellitus affects the psychological status of patients and families. Early reports suggested that insulin-dependent diabetes mellitus (IDDM) had profound effects on the development, personality, and psychiatric status of children. Many studies have called into question these initial observations. Thus, some investigators consider suggestions that diabetes causes major, consistent changes in personality as unsubstantiated (3). Recent studies have used more careful research designs to evaluate specific questions about the extent and nature of psychiatric problems in patients with diabetes. Two psychiatric problems have been of particular concern: depression and eating disorders. Papers in this series by Rodin and Daneman, and Lustman, Gavard, and Clouse address these issues to help the reader understand important, yet sometimes conflicting findings. The question of whether IDDM causes or leads to an increased prevalence of eating disorders is an example of research that is important in a practical sense for the field of diabetes, yet is relevant to under-

standing the types of stressors that play etiological roles in the development of psychiatric illness. Rodin and Daneman provide a commentary that takes us through the thicket of seemingly conflicting results about the relationship of diabetes and eating disorders. Lustman, Gavard, and Clouse review intriguing but as yet poorly understood linkages between diabetes and depression.

Realtors discussing the value of property often comment that three things determine the desirability of a property: location, location, and location. If one area of research carries the same importance for behavioral diabetes, it would be intervention studies. Although technology promises ever more effective methods for treatment and self-monitoring of diabetes, adjustment and adherence among patients with IDDM and non-insulin-dependent diabetes mellitus (NIDDM) remain common clinical problems. Rubin and Peyrot systematically review the intervention literature and underline the need for more studies that evaluate the effectiveness of psychosocial interventions in diabetes. This paper builds on past meta-analyses that also provide systematic assessment of this arena of study (4,5).

Weight management is a particularly critical intervention in the care of patients with NIDDM. The research presented by Perri, Sears, and Clark, and Wing point to the necessity for altering overall strategies of weight-loss programs. Based on research studying obese patients with and without NIDDM, these two papers highlight the critical importance of maintaining continuous professional contact to maximize the benefits of behaviorally oriented weight-loss programs. Structured exercise and intensified treatment strategies may also increase the benefits of such weight-loss interventions.

Severe hypoglycemia is a common and dangerous side effect of insulin treatment. Patients often rely on perceived symptoms to assess and treat themselves between self-blood glucose tests, yet they often misattribute and misjudge these symptoms. Cox and Gonder-Frederick explore this issue and possible benefits of training patients to increase their awareness of hypoglycemic symptoms.

Research on the relationship between stress and diabetes potentially cuts across all three broad topics that are the subject of these commentaries. Surwit, Schneider, and Feinglos review the extensive body of animal and human research that examines the effect of stress on diabetes, including possible influences of psychosocial stress on the development of diabetes and on metabolic control. These authors present intriguing studies suggesting that stress, mediated through autonomic nervous system effects, may influence the development of NIDDM.

Two important and evolving contexts inform and influence behavioral diabetes research: biomedical studies of diabetes mellitus and research in the behavioral and neural sciences. Future developments in these fields will affect the directions of the behavioral research in diabetes profoundly. For example, new psychopharmacological agents for treating depressive and anxiety disorders may be useful in treatment of some patients with diabetes; alternative strategies for weight loss and maintenance often are tested first in nondiabetic overweight individuals; health promotion techniques applied to public health problems, such as smoking cessation, may be applicable to the treatment of patients and families with diabetes; educational approaches that are developed in the schoolhouse may in turn be the basis for new educational techniques in diabetes. Furthermore, new discoveries in diabetes will alter the tasks of the behavioral scientist and mental health professional. Current research on early detection and treatment of individuals at high risk for IDDM may lead to entirely new adherence issues requiring alternative strategies. Increasing recognition of the linkages between insulin resistance, hypertension, obesity, and NIDDM may well lead to increased emphasis on public health and adherence interventions for individuals at risk for this syndrome. Whatever the specific directions set by the research in diabetes and related disorders and by research in the neural and behavioral sciences, it must be recognized that they will modify the future behavioral diabetes research agenda.

In summary, the papers from the *Behavioral Aspects of Diabetes* conference highlight some of the accomplishments and problem areas in this broad range of behavioral research. We hope that this series provides a base of information for those clinicians and investigators wishing to participate in the evolving field of behavioral research on diabetes as well as applying this knowledge to their work with patients.

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Guest Editor

References

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2. Cook TD, Campbell DT (Eds.): *Quasi-Experimentation: Design and Analysis. Issues for Field Settings*. Chicago, IL, Rand McNally, 1979
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5. Padgett D, Mumford E, Hynes M, Carter R: Meta-analysis of the effects of educational and psychosocial interventions on management of diabetes mellitus. *J Clin Epidemiol* 41:1007–30, 1988

APPENDIX—SERIES ARTICLES

Bradley C: Designing medical and educational intervention studies: a review of some alternatives to randomized controlled trials.

Cox DJ, Antoun B, Gonder-Frederick L, Schroeder D, Cryer PE, Clarke WL: Perceived symptoms in the detection of hypoglycemia.

Glasgow RE, Osteen VL: Evaluating diabetes education: are we measuring the most important outcomes?

Johnson SB: Methodological issues in diabetes research: measuring adherence.

Lustman PJ, Gavard JA, Clouse RE: Depression in adults with diabetes.

Perri MG, Sears SF, Clark JE: Strategies for improving the maintenance of weight loss: toward a continuous care model of obesity management.

Rodin GM, Daneman D: Eating disorders and insulin-dependent diabetes mellitus—a problematic association.

Rubin RR, Peyrot M: Psychosocial problems and interventions in diabetes: a review of the literature.

Surwit RS, Schneider MS, Feinglos MN: Stress and diabetes mellitus.

Wing RR: Behavioral treatment of obesity: its application to type II diabetes.