Brief Communications

A Group Approach to the Management of Diabetes in Adolescents and Young Adults

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An interdisciplinary team of health professionals developed a model treatment program to improve adherence, self-management, and metabolic control for five inner city, black, young adult, diabetic women. Following an initial in-hospital evaluation, the staff met with the patients as a group once a month for 18 mo. The professional approach was supportive and nonjudgmental to assist the group members in developing confidence and assuming responsibility for the successful management of their diabetes. Discussions covered the group's educational needs, insulin requirements, and psychosocial problems of adjusting to living with a chronic disease. Analysis of clinical findings showed a significant improvement in plasma glucose, hemoglobin A_{1c}, and cholesterol levels. DIABETES CARE 4: 620–623, NOVEMBER–DECEMBER 1981.

The importance of metabolic control for patients with insulin-dependent (type I) diabetes mellitus has recently been stressed.[1,2] To improve such control, new management techniques such as home blood glucose monitoring[3,4] and subcutaneous insulin infusion pumps[5,6] have been developed, and older fundamentals of diabetic patient care such as nutrition and multiple injections of short-acting insulin have been given new emphasis.[7–9] Recognition of the importance of patient education and the increasing number of nurses, dietitians, and other professionals with a strong commitment to improving diabetes patient care have broadened the scope of diabetes management.[10–13] The problem of optimal patient adherence to the many components of the regimen, however, continues to limit the effectiveness of current management techniques.

In designing strategies to improve patient adherence, self-management, and glucose control, the heterogeneity of the diabetic population should be recognized. For example, it has frequently been pointed out that adolescents with insulin-dependent diabetes require special medical[14–16] and psychological[17–19] attention. With respect to psychological concerns, the use of a diabetic peer group has been suggested as an especially appropriate therapeutic tool during adolescence[20] and with adolescent diabetic girls in particular.[21] Although several investigators have reported that group sessions with diabetic adolescents improved metabolic control[22] and psychological adjustment,[23] these reports did not give detailed accounts of the characteristics of the adolescents or the rationale for medical, educational, or psychosocial group interventions.

It is important that a diabetes care plan take into account the patient's developmental level, cultural milieu, educational background, and economic situation. Optimal diabetes care may require the involvement of health professionals from medicine, nursing, nutrition, social work, and psychology. Despite the differences in disciplines, these individuals must provide a consistent program. With these considerations in mind, we developed a model for the treatment of diabetic adolescents and young adults from an urban, inner city area. Our goals were to improve adherence, self-management, and diabetes control in a pilot group of these patients. The model requires a team of health professionals who together can address all the medical and psychosocial aspects of diabetes management and patient self-care. The treatment of patients in a group is another important component that enables peer interaction.

STUDY DESIGN

The multidisciplinary group program for adolescents and young adults with diabetes involved an initial in-hospital evaluation, followed by monthly outpatient group meetings extending over an 18-mo period. The health professional staff consisted of a diabetes nurse clinician, a psychologist, a

dietitian, and a physician. All functioned as an interdependent team.

Five of seven young patients receiving care at the hospital Adult Metabolism Clinic consented to participate in the program. All had been diagnosed before entering the group and were taking one injection of insulin a day, usually a mixture of NPH and regular insulins. None suffered from serious complications. All were black women from 17 to 23 yr of age. Three came from single-parent homes and none lived completely independent of family members. All had completed or were attending high school, but reading comprehension test grades were lower than their completed school grades.

After each participant and her family was contacted to explain the goals of the program, the group was admitted concurrently for five consecutive days to the Washington University Clinical Research Center. At that time, they received a thorough medical evaluation of their diabetes and adjustments in therapy (including split-dose insulin therapy), as well as nursing, nutritional, and psychosocial assessments to identify problem areas relating to their ability to follow a diabetes management regimen.

The program format was developed on the basis of these assessments and patient suggestions. The monthly Saturday morning sessions began with a joint staff/patient cafeteria breakfast, followed by a discussion and detailed analysis of the previous week's records on several group members. These patient-kept records of urine tests, activity, and food intake were analyzed by the group with staff guidance to provide a learning experience for interpretation of the results. Since each staff member attended all meetings, any problems or questions could be addressed by the most appropriate team member. Each session was followed by a brief staff conference to summarize the group's progress and outline plans for future sessions. Group discussions covered the following wide range of diabetes-related topics: basics of nutrition, food groups, and eating habits; alteration of dietary fat intake; use of the exchange list for individualized meal planning; interpretation of urine test results; understanding individual responses to insulin; development of ability to adjust insulin and/or diet; modification of diet and/or insulin during periods of physical activity or stress; recognition, treatment, and prevention of hypoglycemia; short- and long-term complications of diabetes; effects of diabetes on birth control and pregnancy; drugs, alcohol, and diabetes; educational and career planning; responsibility for self-management; and self-esteem and relationships with peers.

RESULTS

All patients showed improvements in clinical parameters of diabetes control. While limited by the fact that fasting glucose levels were drawn only toward the beginning and end of the first year, the significant ($P < 0.01$) fall in the mean glucose levels from 255 to 149 mg/dl supported our clinical observations of gradual but continuous improvement in metabolic control. Hemoglobin A_{1c} measurements, which became available during the second half of the program, provided a better monitoring technique and again showed a continued, significant ($P < 0.05$) improvement over time with a mean decrease of 2.3%.

Cholesterol measurements also decreased significantly ($P < 0.05$) in all patients from a mean of 193 to 163 mg/dl. In addition, there was a continuous and statistically significant ($P < 0.05$) decrease in the mean daily insulin dosage from 56 to 49 U/day.

Evidence of improved psychosocial adjustment to diabetes was seen in several indirect ways, all reflecting better self-management. First, the group members assumed increasing personal responsibility for their diabetes care, indicated by their willingness to increase the number of daily injections, to adjust insulin dosages, and to modify long-standing dietary habits. Those attending high school and college reported decreased absences and improved ability to concentrate on academic subjects. Finally, each group member reported an increased openness and ease in integrating diabetes into interactions in school, work, social, and family settings.

The estimated cost of the outpatient program was $520 per patient. Note that this figure is approximately one-half to one-third of the average cost of one admission for treatment of diabetic ketoacidosis.

DISCUSSION

Although the sample size was small and no control group was available, it is not unreasonable to suggest that without intervention, the level of metabolic control in this patient group would not have improved significantly and, quite possibly, would have worsened over time. In analyzing the factors that contributed to the apparent success of this program, it is useful to consider those components of the model that enabled these adolescents and young adults to better manage their diabetes. Four important components addressed throughout the program were the group's educational needs, insulin requirements, cultural issues as they affected the group, and the psychosocial problems of adjustment.

Patient education does not necessarily result in improved adherence if it is not linked to motivational factors. By presenting the educational components as steps toward achieving the goal of self-management and hence a less restricted life-style, we were able to provide continuing enthusiasm for the educational program. While the shared cafeteria breakfast took time away from the more organized interactions of each session, we believe it was a valuable element that enabled each meeting to begin in a familiar and relaxed setting.

Nutrition sessions introduced the concepts of the energy nutrient content of foods and the role of these nutrients in blood sugar formation. Long-range nutritional goals were discussed and integrated with short-range goals into meal plans that were developed jointly by the participants and the dietitian. Cooking discussions and demonstrations planned at intervals throughout the program provided an introduction to

low fat foods and techniques of preparation. They also involved the patients in their own therapies.

The participants were encouraged to view urine testing as their own progress monitoring device rather than as the creation of a record for the health care team. The gradual but considerable recorded decrease from preprogram glycosuria provided positive reinforcement to each individual and to the group as a whole. As the records improved and dietary aberrations became easier to identify, peer pressure provided additional incentive for each individual to further improve her management.

As their skills developed in identifying events that caused hyperglycemia or hypoglycemia in their daily lives, the group began to learn how to manage these events. Where possible, the problems they encountered with their diabetes were used as learning experiences for the whole group. For example, a discussion about one patient's encounter with ketosis during a viral respiratory infection allowed the staff to guide the group through the basic management steps that they needed to learn to apply.

The patients were encouraged to experiment, under supervision, with multiple injections of regular insulin during the day rather than a single dose of NPH and regular in the morning. While most expressed an initial reluctance to injecting more often, none wanted to return to one injection after a trial period. Because adolescents and young adults normally have highly variable activity patterns from day to day, the group members were encouraged to use urine test results to make adjustments in their insulin dosage to achieve the best 24-h coverage. This allowed them to participate in more varied activities and thereby decreased their sense of being different from peers.

Cultural issues tend to be an overlooked area in individualizing programs of medical care. Issues such as ideal body proportions, dietary preferences, and attitudes toward the health care system differ among the many groups present in American society. These issues may have profound implications for patient compliance but usually emerge only after strong rapport has been established between patients and health care professionals. This program permitted the discussion of these questions in a relaxed setting over an extended time period. Resolution of these issues, while difficult to quantify, played an important part in the program's success.

The fourth program component that contributed to the overall improvement in metabolic control was a psychological orientation toward self-management built on the developmental tasks faced by this age group. These young women were struggling with the related tasks of achieving autonomy from their families, consolidating a mature sex role identity, choosing some productive experience such as work or more education after high school, and adopting a consistent value system.[24,25] Each of these tasks was given consideration during the program period. Although we encouraged communication between participants and their family members and focused several group discussions on family problems, particularly in relation to effective diabetes management, primary emphasis was placed on peer relationships in the group setting and staff-participant interactions. Our goal was to help the patients learn to overcome feelings of stigma and isolation and to strengthen their sense of personal responsibility for disease management. Clearly, however, in other settings where a stronger family contribution could be expected, greater emphasis on family relationships would be desirable.

The second psychological issue of importance for the group members was the development of a more mature sex role identity. There have been several studies suggesting that diabetes is experienced quite differently by adolescent girls and boys.[26,27] Although a mixed sex group would also provide unique benefits to its members, the sexual homogeneity of our group fostered an openness toward discussions of options concerning birth control, marriage, and childbearing. These sex role concerns were not discussed and dismissed within a single session, but were raised candidly at different meetings as individual members' personal experiences led them to question such issues.

A third task addressed by the group was planning a course of action after high school. The fact that none of the young women were in a very stable or secure situation certainly compounded their problems with diabetes management, but it also caused common concerns about the future to be raised. Again, these personal issues became part of the ongoing dialogue about living and working with diabetes. Finally, each individual in the group was working to incorporate concerns about health and quality of life into a personal value system. These individual efforts to clarify values and standards and to reconcile diabetes with other personal choices contributed in a subtle way to the productivity of the group discussions.

In short, we believe we have demonstrated that a significant improvement in diabetes control for adolescents and young adults is technically possible in an intensive group setting. In the group environment, participants were able to progress from the acquisition of motor skills and knowledge, to decision making, problem solving, the prediction of outcomes, and the evaluation of judgments (or actions) they made. The resulting change in their knowledge about diabetes and in their skill and independence in its management allowed them to pursue a life-style more compatible with their peers, without sacrificing the goal of improved diabetes control.

While our model involved considerable use of health professional time, the economic benefits of improved adherence and control would outweigh the costs even if the improvements resulted in a small reduction of diabetes-related hospitalizations. In addition to the beneficial effects of group interactions, the cost savings from the group approach are substantial. Not only would it have been impracticable for each professional to counsel each of the five patients separately for 18 sessions, but the cost would have been approximately $1,300 per patient. Based on these encouraging results, we thus recommend further research on the cost-effectiveness of a group approach based on our management model, with other, larger, homogeneous groups of diabetic patients.

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