ABSTRACT
With less than half of the diabetic population able to maintain a good glycemic control, it is important to look at some of the other factors like psychosocial problems as an important factor in this. Both children and adult face psychological distress on discovering they have diabetes. They require a lot of support from the family as well as health care providers. This article looks into the psychological stress and its relation to metabolic complications.

KEY WORDS: Psychological; Diabetes; Metabolic complications; Neurocognitive dysfunction

INTRODUCTION
Diabetes is a major health problem in the world. WHO predicts that the number of people with diabetes will double, from 176 to 370 million people by 2030 (1). Half of the people with this disorder do not achieve satisfactory glycemic control, despite the availability of effective treatments (2). As a consequence, millions of people with diabetes are at elevated risk of suffering needlessly from serious complications of the disease. This importantly also suggests that there are several important areas that have the potential to address these problems (1). The reason for the non achievement of the blood glucose is not only lack of compliance but other important factors like psychological distress.

DIABETES AND PSYCHOSOCIAL PROBLEMS
Type 1 diabetes imposes considerable demands on patients and their families. Children and adolescents already coping with normal developmental challenges may not be able to deal with the additional burden of diabetes effectively. This is especially true for the demands of intensive management. Families of children with diabetes play a significant role in diabetes management and are instrumental in the implementation of interventions. Diabetes affects both psychosocial and neurocognitive functioning adversely this thus potentially affects the quality of life of the child and the entire family. Psychosocial factors also influence regimen adherence and glycemic control. Therefore, psychosocial factors are very important to consider in the management of children and adolescents with diabetes.

Many children have adjustment problems soon after the diagnosis of diabetes (3, 4). Although these are resolved within the first year, some of those who do not are at risk for poor adaptation to diabetes, including regimen adherence problems, poor metabolic control, and continued psychosocial difficulties (5-7). In addition, many mothers of newly diagnosed children are at risk for adjustment problems of their own, with significant depressive symptoms observed in approximately one third of mothers; most of these abate within the first year after their child’s diagnosis (8).

A study of adolescents with diabetes found that one third had psychiatric disorders, most involving internalizing symptoms (9); other studies have shown that diabetic youth have greater rates of depression (10) and that those with depression have poor glycemic control (11). Depression and low self esteem are the most frequent psychiatric diagnosis, (12). These psychological adjustment problems during adolescent may pass into adulthood (13).

NEUROCOGNITIVE FUNCTIONING
Studies indicate that children who develop diabetes before 5 years of age and who have frequent episodes of hypoglycemia are at risk for neurocognitive deficits, particularly in visual-spatial functioning (14, 15, 16). In addition, research findings indicate that children with diabetes miss more school and that lower reading achievement was related to more school absences (17). Studies have also shown that diabetic children, especially boys, are more likely to have learning problems (18). Other research has found poorer attention functioning and lower verbal intelligence in children with a history of significant hypoglycemia (19).
QUALITY OF LIFE

There are very few quality of life studies in children and adolescents with diabetes (20). Quality of life can be reliably measured by self-report (21). Better quality of life in youths is associated with increased self-efficacy and less depression (22), as well as improved metabolic control (23).

PSYCHOSOCIAL FACTORS RELATED TO REGIMEN ADHERENCE AND METABOLIC CONTROL.

Regimen adherence declines over time and is especially poor among some adolescents (24, 25). Metabolic control is worse in single-parent, lower-income youths. (26-28) Low levels of family conflict and stress, high levels of cohesion and organization, good communication skills, and appropriate involvement of both parents and children in diabetes management have been associated with higher levels of regimen adherence (29,30) and better metabolic control (31). High levels of self-efficacy (32) and low levels of learned helplessness (33) are associated with good glycemic control.

PSYCHOSOCIAL THERAPIES

A number of studies have examined the efficacy of psychosocial interventions for diabetic youth. Recent studies indicate that family-based behavioral procedures such as goal-setting, self-monitoring, and appropriately shared responsibility for diabetes management have improved regimen adherence and glycemic control (34). In addition, such interventions can improve the parent-adolescent relationship (35, 36). Psycho-educational interventions with children and their families that promote problem-solving skills and increase parental support early in the disease course have improved long-term glycemic control of children (37).

The efficacy of group interventions for diabetic youth has also been systematically evaluated. For example, research findings have shown that peer group support and problem-solving have improved short-term glycemic control (38). Group coping skills training has been shown to help optimize glycemic control and quality of life for adolescents involved in intensive insulin regimens (39,40). In addition, stress management and coping skills training has reduced diabetes-related stress (41) and improved social interaction (42) in adolescents.

SIGNIFICANCE

Diabetes is a psychologically and behaviorally demanding disease; therefore, psychosocial factors are relevant to nearly all aspects of its management. The psychosocial impact of diabetes has been recognized as a stronger predictor of mortality in diabetic patients than many clinical and physiological variables (43). Considering the importance of psychosocial factors in management of diabetes, the rapidly increasing number of adult patients with diabetes (mostly type 2), and the tremendous and growing public health burden of diabetes, the development and clinical implementation of effective psychosocial interventions are critical needs. Such interventions could help patients improve self-care behaviors and glycemic control, thus reducing their risk of health complications and improving their quality of life.

PSYCHOSOCIAL FUNCTIONING.

The prevalence and course of psychiatric disorders, particularly affective and anxiety disorders, in adults with diabetes is well documented (44). Research findings have demonstrated that depression is more common in patients with diabetes than in the general population; at least 15% of patients have clinical depression (45). Findings indicate that depression is associated with worse glycemic control and health complications (46,47), as well as decreased quality of life (48), and is likely to be persistent (49). A recent meta-analysis confirms the association of depression with hyperglycemia and complications in both adult type 1 and type 2 diabetes (50). Evidence indicates that depression doubles the incidence of type 2 diabetes, independent of other risk factors (51, 52). In patients with preexisting diabetes, depression is an independent risk factor for coronary heart disease and seems to accelerate its presentation (53). Research has also shown that anxiety disorders are common in adults with diabetes and linked with poor glycemic control (54, 55).

There is promising evidence that some of the adverse effects of depression and anxiety on diabetes are reversed by psychiatric treatment. Randomized controlled intervention trials have shown that treatment with either cognitive behavior therapy or antidepressant medication can improve both mood and glycemic control (56, 57). Psychopharmacologic interventions have been shown to reduce anxiety and improve glycemic control (58).

QUALITY OF LIFE.

Diabetes-related quality of life can be reliably measured (59). Quality of life in adults with diabetes
is positively affected by increased physical activity and adequate social support. Improved quality of life has also been demonstrated after intensification of insulin regimens, which can be attributed to patients' greater flexibility in physical activities and diet (60). Quality of life is adversely affected by the presence of comorbid psychiatric disorders and health complications (61), as well as physical complaints and worries about the future (62). In addition, research has shown that quality of life is diminished when diabetes-specific health behaviors are associated with a sense of burden (63).

PSYCHOSOCIAL THERAPIES.

A number of controlled studies have evaluated the effects of psychosocial interventions for adults with diabetes. A recent meta-analytic review of diabetes self-management interventions indicated significant improvements in glycemic control, as well as reductions in diabetes-related hospitalizations and health care costs, particularly when interventions incorporated individually tailored strategies to change behavior (64).

For example, interventions that increase patients' sense of empowerment and self-management skills have resulted in improvements in self-efficacy, self-care behaviors, glycemic control, patient satisfaction, and quality of life (65, 66). These benefits have also been found in studies with older minority patients with type 2 diabetes (67).

Suboptimal diabetes self-management has been identified as one of the possible causes of poor outcomes of diabetes care in general practice (68). The importance of psychological, social, and behavioral factors for patient self-management has been indicated (69). Access to patient-centered self-management support and education has shown to improve outcomes of diabetes care (70). Effective communication between patients and providers has been suggested to be important for optimal treatment outcomes. For instance, application of motivational interviewing techniques has been shown to improve the success rate of behavior change consultations. Access to a coordinated interdisciplinary diabetes care team to offer appropriate care, self-management education, medical advice, or psychosocial support, has been identified as an important factor for improving treatment outcomes in diabetes.

Delayed initiation of medication therapies to prevent long-term complications is commonly observed in general practice settings. Both patient and provider beliefs appear to contribute to the delayed use of effective therapy (e.g., misconceptions of the consequences of initiating medication, that medication is not efficacious or may have serious side effects (71). These factors lead to a reluctance to intensify treatment regimens, which may be overcome through improved communication.

RELATIONSHIP WITH HEALTH CARE PROVIDERS

The quality of patient-provider relationships was rated high by patients; 88.8% reported that they have a good relationship with the people who care for their diabetes. However, most providers reported that they need to better understand the psychological consequences of diabetes (69.8%) and the various ethnic cultures that they deal with (78.8%).

The paradigm for treating diabetes care is changing on a global scale. Governments, health insurers, health care professionals, and nongovernmental organizations are increasingly recognizing the importance of new partnerships and new ways of adopting more effective approaches to helping people with diabetes better self-manage the medical and psychosocial challenges associated with the disease. Continuous and increasing collaborative efforts are needed to transform care for diabetes and other chronic diseases from the acute to the chronic care model. Future focus needs to be placed on implementation and translational research, with international sharing of effective tools for furthering a person-centered approach to chronic disease management and prevention.

CONCLUSIONS

It has been well demonstrated that psychosocial factors play an integral role in the management of diabetes in both children and adults. Research has demonstrated the efficacy of a number of psychosocial therapies that can improve regimen adherence, glycemic control, psychosocial functioning, and quality of life. There is an increasing need to develop psychosocial intervention programs for specific patient populations and to demonstrate the cost-effectiveness of these approaches. Any chronic disorder like diabetes requires an approach which is slightly different from the conventional approach of patient management. This requires a change in relationship with the patient as well empowering the patient with better management skills. There is an increasing need for studies which look at these factors scientifically and in clinical setting.
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