

The Psychosocial Impact of Diabetes in Adolescents: A Review

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Abstract

Type 1 Diabetes mellitus is known to have a major psychological impact on adolescents. Different types of therapies have been developed to support the patient as well as their families to deal with this impact. These include Behavioral Family Systems Therapy and Cognitive Behavioral Therapy. However, studies conducted recently, though few in numbers have shown a direct relationship between general psychological functioning and metabolic control. Self-management of diabetes and its complication therefore, is an integral part of these program. This review looks into the various studies carried out that decide the best approach towards addressing the psychological aspect of type 1 Diabetes Mellitus.

Keywords: Diabetes; Adolescents; Psychology; Depression; Stress.

Introduction

Diabetes mellitus is the most common metabolic disease in the young and type 1 diabetes, resulting from beta-cell destruction and absolute insulin deficiency, accounts for over 90% of diabetes in young people aged less than 25 years.¹ It affects 18 to 20 per 1,00,000 children a year in the United Kingdom.² Secondary to exposure of environmental risk factors during the neonatal period and in the first year of life, plays a significant role in setting off the immune process leading to the destruction of β -cells and the development of type 1 diabetes.³ The American Diabetes Association committee recommends the term type 1A diabetes for immune mediated diabetes with its destruction of the islet β -cells of the pancreas.⁴ Non-immune mediated diabetes with severe insulin deficiency is termed type 1B.

The development of type 1 diabetes is a life sentence to a difficult therapeutic regimen that is only partially effective in preventing acute and chronic complications.⁵ Treatment of insulin-dependent diabetes mellitus (IDDM) is designed to maintain near-normal blood glucose levels.⁶ The regimen includes several daily insulin

injections, self-monitoring of blood glucose, a prescribed meal plan, regular exercise, and problem-solving tactics to regulate blood glucose.

Children and young people with diabetes are at a greater risk for emotional and behavioral problems.⁷ However, the psychological aspect of the disease is often missed with whole/most of the emphasis given on the strict maintenance of blood glucose. Few aspects of the psychological domain of a diabetic have been studied. This study analyzes some of them in a critical perspective.

Family Behavior and Support

Adaptation to IDDM is often more difficult during adolescence when family communication and conflict resolution tend to deteriorate. The treatment burden pervades daily life, complicating other challenges of adolescence, and the regimen often becomes the focus of parent-adolescent conflict.⁸

Numerous studies have implicated family communication, conflict resolution, and problem-solving skills as critical elements of effective family management of type 1 diabetes during adolescence. A study independently assessed 58 adolescents diagnosed with type 1 diabetes and their parents (mothers) with structured interviews and scales.⁹ They concluded that youths with well-controlled diabetes reported more cohesion and less conflict among family members and their parents, in which their family members were encouraged to behave independently. In addition, parents of adolescents with poorly controlled diabetes believed that the disease negatively affected the child's personality, physical well-being, schooling, and participation in activities away from home. These findings suggest a complex interplay between the diabetic adolescent's psychological and physical functioning, metabolic control, and the family environment. Family conflict has been associated with adolescents' treatment adherence and diabetic control in a few cross-sectional studies. Another study carried out on 72 children with type 1 diabetes and their parents reported similar finding.¹⁰ They added that the children living with both biological parents or with a single parent had significantly better diabetic control than those living with a step-parent or adoptive parents. However, these studies failed to take into account other factors (like stress at work for parents or low mood due to lack of support from peers for the patient) that could have led to the patient's and the family's behaviour pattern which could have affected the results.

Some other studies concluded that the association between

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parent-adolescent relationships and family conflict may be bi-directional and discussed that it may be plausible that a treatment targeting family communication and conflict resolution could improve adaptation to IDDM, treatment adherence and diabetic control.^{11,12} Another study supported the effectiveness of family therapy and added that it is a treatment option which can mediate improved diabetic control by changing family relationships to allow for a better balance between parental and self-care of the child with poorly controlled IDDM.¹³ The efficacy of Behavioral Family Systems Therapy (BFST-D) in improving glycemic control was highlighted by other studies, which added that further research is needed to identify the mechanisms of this effect and to achieve cost-effective dissemination of the intervention.^{14,15}

Though a lot of studies have been done in this respect, there are very few large scale trials conducted to conclude the behavioral patterns in the families of type 1 diabetes patients. Most of the studies do not involve randomization of the subjects, thereby giving scope for bias. A large proportion of the studies in this field have either been of quantitative or mixed (both qualitative and quantitative) approach, with very few qualitative studies done. Moreover, most studies had control trials where both groups differed at baseline along many clinically meaningful dimensions, impeding the confirmation of clear treatment effects.¹³

Stress

Adolescents with type 1 diabetes mellitus face a number of stressors and challenges as a result of their chronic illness.¹⁶ These include the need to manage a complex medical condition that requires daily completion of multiple self-care behaviors, the impact of diabetes on social interactions with family members, peers, and teachers, as well as the interference of symptoms such as hypoglycemia with daily activities.¹⁷

Studies assessing the impact of stress on health outcomes among have been done on persons with type 1 diabetes. The effects of stress on regimen adherence and metabolic control have been of particular interest. Stress has the potential to affect metabolic control directly through its impact on cortisol and other catabolic hormones that interfere with insulin metabolism. It may also affect metabolic control indirectly, by interfering with completion of self-care tasks. A study assessed 98 adolescents with type 1 diabetes, dividing them into three groups based on annual tests of hemoglobin A1 values.¹⁸ Questionnaires assessing frequent minor stressors, as well as ways of coping with these stressors were given annually over the course of 4 years. Their study supported a direct relationship between stress and metabolic control. However, there appears to be no consensus regarding the relationship between stress and metabolic control. Another study showed that adherence mediates the relationship between stress and metabolic control.¹⁹ Yet another study showed no direct relationship between stress and metabolic control, but added that an indirect relationship might exist between the two.²⁰ More recent works which observed 54 people with Type 1 diabetes over 21 days, suggested that such inconsistent findings may be attributed

to the significant variability that existed among individuals in the degree to which stress affects blood glucose levels.²¹

Relatively little empirical research has been done to substantiate the effect of psychological counselling for stress in complicated diabetes. Results indicate that cognitive behavior therapy (CBT) is effective in the treatment of stress related depression in Type 1 diabetes patients, both in reducing depressive symptoms and HbA1C.²² Favorable effects have been observed in pilot studies applying CBT in the field of stress management, eating disorders and self-destructive behavior, but future research should substantiate these preliminary findings. Studies done in this field have largely been quantitative. Most of them are uncontrolled and involve small samples. There is an urgent need for controlled, large scale trials to form a consensus with regards to the relationship of stress and adherence with metabolic control in type 1 diabetes patient.

Peer Support and Personal Model

Research on self-management in adolescents has primarily focused on the relationship between adolescents and their families. However, a recent review recommended that "greater attention be paid to the social context" in which the adolescent lives which include peers and friends.²³

A study concluded though through semi structured interviews that friends and peers are an important source of emotional support for adolescents with diabetes,²⁴ and this support is associated with adherence,²⁵ and metabolic control,²⁶ and may also be associated with well-being.²⁷ In a sample of adolescents with chronic illnesses (predominantly type 1 diabetes), a study found that high support from only family or friends was not necessarily associated with better adjustment, but both components (supportive family and friends) were associated with better adjustment.²⁸

A study noted the paucity of research on the role of the adolescent's peer group, at a time when friendships develop and peer influence becomes increasingly important.²⁹ There appears to be very little research exploring the relationship of the denial of disease and peer pressure. More qualitative research needs to be done to investigate the reasoning of a particular behavior pattern or adjustment of the type 1 diabetic due to peer behavior or response.

One of the models of health behavior that researchers have begun to examine is the self-regulation model,³⁰ which postulates that individuals' personal model of an illness is a proximal determinant of both their emotional and behavioral response to a health threat. Personal models of diabetes have been shown to be proximal determinants of self-care behavior in both adults and adolescents with diabetes, both cross-sectionally and prospectively.²⁶

Another study identified five components to personal models of an illness: illness identity and associated symptoms; its cause; the consequences of the illness; how long it will last; and treatment efficacy, and concluded that people with strong identity and cure components in their common-sense representations of common illnesses have a greater propensity to visit a doctor when feeling ill.³¹ Another study stated that in adolescents with diabetes,

beliefs about the efficacy of their treatment predicted dietary and exercise self-management.³² While another study with a sample size of over 2,000 participants showed that personal models of beliefs about the effectiveness of treatment proved to be a better predictor of self-management than either barriers to adherence or perceived seriousness.³³ It also concluded that individuals' beliefs in the efficacy of the treatment regimen predicted better dietary self-care. Similarly for depression and anxiety, the greater the perceived impact of diabetes on daily life, the more depression and anxiety participants reported.

If personal models are proximal determinants of individuals' behavioral and emotional response to illness, they may serve to mediate the association between demographic variables and outcome measures. Studies using the personal models approach have reported associations between illness representations and demographics, and as well as demographics and self-care. However, the possible mediational role of personal models has not yet been explored and clearly warrants further examination.^{32,33}

Most of the studies in this field have been cross-sectional, and thus cannot resolve the direction of causal relations underlying associations between variables.²³ There is a need for more longitudinal studies about personal models. Other limitations of the studies conducted in this field include relatively small sample size, bias toward higher socioeconomic groups, the use of adults, modified questionnaires and the use of only adolescent self-report measures which might not totally be unbiased.

Quality of Life

A study which independently assessed 58 adolescents diagnosed with type 1 diabetes and their parents (mothers) with structured interviews concluded that when compared with adolescents with poor control, those with good control reported fewer diabetes-related symptoms, had less anxiety and had a more positive self-concept.⁹

Mean while, a study performed in 2,101 adolescents, aged 10-18 years, from 21 centres who were evaluated through the Diabetes Quality of Life (DQOL) questionnaire, It concluded that Lower HbA_{1c} was associated with lower impact, fewer worries, greater satisfaction and better health perception for adolescents.³⁴ Another study also reported similar finding.³⁵ However, it added that the impact of diabetes was similar for both boys and girls with no effect regarding age or the duration of diabetes, but the influence of HbA_{1c} values was significant. Compared with boys, girls had an earlier (at about 12 years of age) and more significant increase in worries. While another study proposed that adolescents who received intensive diabetes management (IDM) plus a behavioral program of coping skills training had lower HbA_{1c} concentrations and less negative impact of diabetes on quality of life than those who received IDM alone.³⁶

Very few studies have concentrated on the interventional aspect of improvement of quality of life in adolescents diagnosed with diabetes. Only behavioral therapy and no other form of intervention

seems to have been studied in this field. Moreover, an isolated concept of quality of life has been interpreted with factors such as the effects on education and on some daily chores of life like driving not taken into consideration. Moreover, few qualitative studies have been done. Studies also need to determine gender differences since the quality of life concept differs in both sexes.

Conclusion

The nature of the relationship between psychological functioning and metabolic control is still very much unclear. Metabolic control has often been correlated with compliance and adaptation to the disease, while psychological functioning relates only to adaptation.³⁷ However, recent studies (though few in numbers) have shown a direct relationship between general psychological functioning and metabolic control. It should be remembered that good compliance can only come when there is good adaptation.

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