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Original Research

Psychosocial Influences on Glycemic Control in Women with Pre-Existing Diabetes Preparing for Pregnancy



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ABSTRACT

Objective: The purpose of this study was to identify psychosocial factors associated with glycemic control in a sample of adult women with type 1 or type 2 diabetes mellitus preparing for pregnancy.

Methods: This was a cross-sectional study. Participants comprised a subsample (n=38) of a larger study investigating predictors of prepregnancy care uptake in women with pre-existing diabetes. Participants were recruited from the diabetes and pregnancy clinics at 2 major hospitals and completed self-report questionnaires on personality, coping style, social support and knowledge of diabetes and pregnancy. The main outcome was glycemic control using glycated hemoglobin (A1C) as the outcome of interest.

Results: The sample was divided into good (n=20) vs. poor (n=18) glycemic control based on their A1C at entry to the study. Univariate tests indicated no differences between the 2 groups on any of the variables except that the good control group were better educated. Hierarchical multiple regression analysis revealed that problem-focused coping and higher education remained significantly associated with better glycemic control when controlling for potential confounds.

Conclusions: Providing women with enhanced prepregnancy diabetes education with a particular emphasis on problem-solving and coping skills may enable them to take more proactive approaches to challenges they face in managing their diabetes. That in turn can improve glycemic control at the critical period.

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R É S U M É

Objectif : Le but de cette étude était d'identifier les facteurs psychosociaux associés à la régulation glycémique à partir d'un échantillon de femmes adultes souffrant de diabète sucré de type 1 ou de type 2 se préparant à une grossesse.

Méthodes : Il s'agissait d'une étude transversale. Les participantes constituaient un sous-échantillon (n = 38) d'une plus vaste étude examinant les prédicteurs de l'utilisation des soins prégrossesse chez les femmes ayant un diabète préexistant. Les participantes avaient été recrutées dans les cliniques de diabète et de grossesse de 2 grands hôpitaux et ont rempli les questionnaires d'autoévaluation sur la personnalité, la capacité d'adaptation, le soutien social, et les connaissances sur le diabète et la grossesse. Le résultat principal était la régulation glycémique en utilisant l'hémoglobine glyquée (A1c) comme résultat d'intérêt.

Résultats : L'échantillon a été réparti selon la régulation glycémique au moment de leur admission à l'étude en se basant sur leur A1c de la manière suivante : bonne régulation (n = 20) vs mauvaise régulation (n = 18). Les analyses univariées n'ont montré aucune différence dans les variables des

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2 groupes, si ce n'est que le groupe ayant une bonne régulation glycémique avait reçu une meilleure éducation. L'analyse de régression hiérarchique multiple a révélé qu'un mode d'adaptation axé sur les problèmes et qu'une meilleure éducation demeuraient significativement associés à une meilleure régulation glycémique si l'on tient compte des facteurs de confusion potentiels.

Conclusions : Fournir aux femmes un meilleur enseignement sur le diabète pré-grossesse en mettant particulièrement l'accent sur les habiletés en matière de résolution de problèmes et d'adaptation peut leur permettre d'adopter une approche plus proactive pour remédier aux difficultés auxquelles elles sont confrontées dans la prise en charge de leur diabète. Ce qui en contrepartie améliorerait la régulation glycémique en période critique.

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Introduction

Pregnancies complicated by pre-existing diabetes mellitus are associated with a higher risk of perinatal mortality and morbidity compared with the general population (1,2). Adverse outcomes have been directly linked to poor glycemic control (3,4). Despite strong evidence that tight glycemic control increases the likelihood of improved pregnancy outcomes, women with diabetes continue to enter pregnancies poorly prepared, with suboptimal glycemic control (5). The reasons are as yet not fully understood.

In other populations of people living with diabetes, a number of psychosocial factors have been associated with glycemic control either directly or indirectly by affecting self-management behaviours. The effects on glycemic control of knowledge, social support, coping style, emotional distress and psychologic arousability have been examined with mixed results. Whereas some studies have found greater knowledge to be associated with better glycemic control (6), others have reported no association (7). Problem-oriented but not problem-avoidance coping style has been associated with better glycemic control (8). Nonsupportive family behaviour was reported to have an indirect effect on glycemic control through adherence to treatment regimen behaviour (9), but others have found no association between family support and glycemic control (10). Poor glycemic control has been associated with extreme levels of psychologic arousability (8) and higher levels of emotional distress (11).

Further and more systematic studies could use health behaviour models that provide theoretical frameworks for systematic investigation of variables that affect glycemic control through self-management behaviours. One such model is Anderson's behavioural model (12), which posits that individual characteristics that contribute to health outcomes can be categorized into predisposing, enabling/blocking and perceived need. Predisposing factors are individual characteristics, such as personality and coping style, that influence the propensity to engage in self-care behaviour, including how one deals with stress. For example, emotional stability, measured as neuroticism, may affect glycemic control in this population. Persons who have difficulty in regulating their emotions (high on neuroticism) might be expected to have more difficulty in achieving or maintaining good glycemic control because such a trait affects their ability to make and act on rational decisions as well as cope effectively with stress. Enabling/blocking factors include environmental attributes that may function as resources or barriers to self-care. These factors include social support and knowledge regarding diabetes and its management. Perceived need can refer to the severity (of disorder) that would drive help-seeking behaviour.

To date, 1 study (5) has examined nonpsychosocial factors associated with glycemic control in a cohort of diabetic women attending for preconception care. Two factors significantly predicted poor glycemic control: not being advised to achieve a target glycated hemoglobin (A1C) and having a prior pregnancy with complications. However, we are not aware of any studies that have

examined psychosocial predictors of glycemic control in this pre-pregnancy population. The aim of the current study, therefore, was to examine psychosocial factors associated with glycemic control in a sample of adult Australian women with type 1 or type 2 diabetes mellitus who were attending prenatal care clinics. We focused on the effects of problem-focused coping style and neuroticism (predisposing factors), supportive and nonsupportive family behaviours and knowledge about diabetes and pregnancy (enabling/blocking factors), controlling for potential sociodemographic (age, education level) and clinical (duration of diabetes) confounders. We considered perceived need as a constant as all the women in the study were attending a prepregnancy care program with the primary aim of preparing themselves for pregnancy.

Methods

Subjects

The participants were women who were part of a larger study (13) recruited from 2 major hospitals in metropolitan Melbourne. The larger study ($n=123$) was an investigation into predictors of prepregnancy care attendance for women with pre-existing type 1 or type 2 diabetes. In the original study (13), of 163 women who were recruited, 123 returned completed questionnaires, thus representing a 75% response rate. The 38 women who comprised the sample reported in this paper were women with type 1 or 2 diabetes (women were not approached to participate according to diabetes type) who were preparing for pregnancy by attending prepregnancy clinics at the recruitment sites and for whom an A1C value was available at the time of recruitment. We were particularly interested in this subsample as these women had only just started the prepregnancy care and, therefore, there were potentially fewer confounding factors affecting glycemic control. Inclusion criteria were age 18 years and over, a diagnosis of type 1 or type 2 diabetes, the ability to read and write English, no intellectual disability and no history of a serious mental illness (e.g. severe clinical depression, bipolar affective disorder or any psychotic illness).

Measures

The following measures were obtained by self-report: personality, coping style, knowledge of diabetes, social support and sociodemographic and medical characteristics.

The personality trait of neuroticism was measured using the International Personality Item Pool (14,15); in the current study, the internal reliability for neuroticism was acceptable (Cronbach's alpha, 0.86). Problem-focused coping style was assessed using the Ways of Coping Checklist, revised (16); in the current study, the internal reliability of the problem-focussed subscale was acceptable (Cronbach's alpha, 0.84). Knowledge of diabetes was assessed using the Knowledge Scale taken from the Pregnancy and Diabetes Interview Schedule (17,18), a modified version of the Diabetes

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