Partner support, social-cognitive variables and their role in adherence to self-monitoring of blood glucose in type 2 diabetes

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Summary

In Portugal, diabetes affects 11.7% of the population, of whom about 90% have type 2 diabetes. Patients and their partners are affected and the latter have a direct impact on patients’ adaptation to diabetes. A large proportion of patients, at diagnosis, have to readjust their daily routines in order to integrate self-care behaviours related to diabetes.

The goal of this study was to analyse the relationship among partner support, social-cognitive variables about self-monitoring of blood glucose (SMBG) (intentions, attitudes, subjective norms, perceived behaviour control, action planning and coping planning), adherence and glycaemic control in type 2 diabetes patients, diagnosed in the past 12 months.

A total of 179 people with diabetes participated in the study. The instruments used were: Multidimensional Diabetes Questionnaire; Revised Summary of Diabetes Self-Care Activities Scale; and Planned Behavior Questionnaire – Self-Monitoring of Blood Glucose. Glycaemic control was assessed by HbA1c.

The perception of positive support from partners and intention to perform SMBG predicted adherence to SMBG. Furthermore, positive support mediated the relationship between intention and adherence to SMBG. Positive and negative partner support were positively associated with intention, action and coping planning and adherence to SMBG. Good metabolic control was negatively associated with negative support.

The results show the importance of partners’ support and social-cognitive variables, regarding self-monitoring of blood glucose, on patients’ adherence.

Key words
diabetes; adherence; self-monitoring of blood glucose
attitudes (behavioural beliefs), subjective norms (normative beliefs) and perceived behavioural control (beliefs of control) that, in the final analysis, determine the intentions and behaviour.10–12

The influence of spousal support is very significant and important for couples who have to deal with a chronic illness,13 and appears to be even more significant in couples where one of the spouses has diabetes, because diabetes care often involves the spouse (e.g. buying and preparing food, medication administration, and involvement in physical exercise).13 Previous studies suggest that the most important behaviours in treatment adherence, from spouses, are positive support, encouragement, praise, and reminding and helping the patient to plan. Criticism and pressure are not associated with positive outcomes.14–16

Stephens et al.17 found two types of negative and positive social control strategies, i.e. warning and encouragement, used by spouses to urge patients with type 2 diabetes to improve adherence to diet. Both spousal warning and encouragement were associated with patients’ adherence to the recommended diet, with warning (regarding active involvement in diet, diabetes complications, adherence, dietary information, doubts or concerns) being associated with poorer adherence and, on the other hand, encouragement (regarding active involvement in diet, adoption of appropriate diet, the consumption of healthy foods, compliments on dietary management) being associated with better adherence. In fact, patients’ dietary behaviour appears to be best served when the spouse uses more positively toned and less coercive influence attempts.17

Coyne and Smith13 have distinguished two types of relationship-focused coping, which they report as ways of providing support when dealing with diabetes: active engagement and protective buffering. Active engagement is based on support behaviours, such as openly discussing the illness with the partner, asking about partners’ feelings and engaging in joint problem-solving strategies. On the other hand, protective buffering refers to support behaviours, including hiding concerns from the partner, making believe that everything is all right and avoiding conflict.

Schokker et al.18 found that relationship satisfaction was positively associated with active engagement, and negatively with protective buffering, in both patients and partners.

The aim of this study was: to analyse the relationship among spousal support, social-cognitive variables regarding SMBG (intentions, attitudes, subjective norms, perceived behaviour control, action and coping planning), adherence and glycaemic control; to find out the best predictors of adherence to self-care behaviours; and, finally, to verify whether positive support was a mediator in the relationship between intention and adherence to SMBG, in patients with type 2 diabetes.

**Methods**

**Participants.** Participants were identified by physicians in health care units, and were eligible for the study if they had a diagnosis of type 2 diabetes of <12 months and had a partner. Exclusion criteria included having a cancer diagnosis. The sample included 179 individuals with type 2 diabetes, diagnosed in the past 12 months, with a mean age of 59.6 years (SD=10.33); 57.5% were...
males, 97.9% had been married for 33.4 years (SD=12.9), and 67.7% had four years of school education.

**Procedure.** Data were collected in several health centres in the North of Portugal, on the same day as the regular medical appointment. The Ethics Committee of the Health Association in the North of Portugal approved the study and participation was voluntary and confidential. All patients and partners completed an informed consent form to participate in the study. Patients and partners answered the questionnaires separately. A cross-sectional and correlational design was used.

**Instruments.** Adherence was assessed using the Revised Summary of Diabetes Self-Care Activities Measure (RSDSCA), a self-report questionnaire that consists of 19 items grouped into 5 dimensions (general diet, specific diet, exercise, foot care and blood glucose control). Higher results indicate higher adherence to the respective behaviours. Cronbach’s alphas of subscales ranged from 0.61–0.96, and the total scale has an alpha of 0.61.

Social-cognitive variables were assessed using the Planned Behavior Questionnaire – Self-Monitoring of Blood Glucose (PBQ-SMBG), which is based on TPB. This instrument is composed of 22 items, grouped into 5 subscales: intentions, attitudes, subjective norms, perceived behaviour control, and action and coping planning. Cronbach’s alphas ranged from 0.67–0.98. Higher results in each subscale indicate higher use of the social-cognitive variables regarding SMBG.

Spousal support was assessed using the Multidimensional Diabetes Questionnaire (MDQ) that includes 41 items and 3 subscales: perceptions of diabetes and related social support in general; perceptions of self-care activities, namely, frequency of social incentives related to self-care activities; and self-efficacy and outcome expectancies. In this study, only the third subscale was used, which assesses the frequency of spouse support (positive and negative) behaviours in diabetes self-care (medication, diet, glycaemic control, exercise and foot care adherence). Cronbach’s alpha for positive support was 0.85 and 0.77 for negative support. Higher scores indicate higher levels of positive or negative support behaviours respectively.

Glycaemic control was assessed by glycosylated haemoglobin (HbA1c).

**Data analysis.** In order to analyse the relationship among social-cognitive variables, spousal support and adherence, Pearson’s correlation coefficient (r) was used. To determine the best predictors of adherence, a multiple regression analysis (method enter) was conducted. In order to determine if positive support mediated the relationship between intention to perform SMBG and adherence to this self-care behaviour, a mediation analysis was conducted following Baron and
Kenny’s approach. This includes four conditions for determining if an independent variable affects a dependent variable through a mediator variable: (1) there is an association of the independent variable with the mediator; (2) there is an association of the mediator with the dependent variable; (3) there is an association of the independent variable with the dependent variable; (4) the association of independent and dependent variables reduces significantly or disappears when the mediator variable is added to the equation.

**Results**

**Relationships among social-cognitive variables, spousal support, adherence and glycaemic control.** The results in Table 1 show positive partner support to be positively associated with intention to perform SMBG, subjective norms, action and coping planning and adherence to SMBG. In turn, negative support was also positively associated with intention to perform SMBG, subjective norms, action and coping planning, adherence to SMBG and glycaemic control (HbA1c). Also, adherence to SMBG was positively associated with intention, attitudes, subjective norms, perceived behaviour control, and action and coping planning. High levels of HbA1c (low glycaemic control) were positively correlated with partner negative support, intention to perform SMBG, subjective norms and adherence to SMBG.

**Predictors of adherence to SMBG.** Table 2 shows positive partner support to be positively associated with intention to perform SMBG, as significant predictors of adherence to SMBG. The model explained 36.6% of the variance.

**Positive partner support as a mediator of the relationship between intention to perform SMBG and adherence to SMBG.** Since positive support predicted adherence to SMBG, a mediation analysis was conducted to determine whether positive support mediates the relationship between intention to perform SMBG and adherence to SMBG.

The four steps of Baron and Kenny were confirmed in the regression analysis, as shown in Table 3. The effect of intentions on adherence to SMBG (path c) was significant (β=0.513; p<0.00); the effect of intentions on positive support (mediator) (path a), was also significant (β=0.359; p<0.00); the effect of positive support on adherence to SMBG (path b) was significant (β=0.357; p<0.00). Finally, the effect of positive support on the relationship between intentions and adherence to SMBG (path c’) was also significant (β=0.388; p<0.00).

Figure 2 shows the results of the mediation analysis, revealing a partial
mediation of positive partner support in the relationship between intention and adherence to SMBG. In fact, there is a statistically significant reduction in the effect of intention on adherence to SMBG upon the addition of positive support to the model.

**Discussion**

The literature is vague with regard to studies aimed at determining the relationship between social-cognitive variables regarding SMBG and adherence to SMBG. However, TPB is considered a relevant model in the prediction and explanation of health-related behavioural changes, supporting this study’s findings.

Partners’ support has been shown to be indispensable and determinant in diabetes self-care. In fact, support from the partner has been found to be the most important source of support during illness episodes providing informational, tangible and emotional support in a study that compared support provided by family and friends in adolescents with diabetes, found family support to be directly involved in more instrumental support, related to diabetes management, such as insulin injections, diet and SMBG.

Illnesses that require a complex regimen, such as diabetes, may need more frequent dyadic coping between spouses that requires a change in lifestyle (i.e. diet and exercise) and is best accomplished by the couple. In our study, the results highlight the importance of partners’ positive support as praise, encouragement, and reminding the patient to adopt diabetes self-care behaviours. These positive reinforcements lead to a higher intention to monitor glucose and to a higher perception of control regarding this behaviour. Patients who perceive positive support from partners often develop an action and coping plan, to help them in the management of obstacles and constraints regarding SMBG. The help of a collaborative partner may be paramount in this case. In fact, van Dam et al. in their review of several studies about social support in diabetes, found that social support influences the management and outcomes of diabetes care through different ways: patients’ social network is an important source of information and plays a leading role in the diagnosis, treatment and management, and in dealing with expectations and complications of diabetes. This fact may be important to health professionals, emphasising the need to include partners in patients’ treatment, while working on beliefs regarding diabetes that influence social-cognitive constructs, since they have extreme importance in decision making about self-care behaviours in diabetes patients. Besides emotional support, social support may lead to better coping strategies and better structure in daily routines, empowering the patient to deal with possible barriers that may occur regarding SMBG. Plus, according to the results, the importance of behaving in accordance with significant others’ expectations is evident.

Therefore, in this sample, both positive and negative support were associated with the patient’s intention to monitor glucose, reiterating the importance of partner support, either positive or negative. According to these results, the decision to perform SMBG is based on intentions, expectations of significant others, the perception of control, and action and coping planning to perform SMBG. It is important to emphasise, in diabetes care, how the patient intends to monitor glucose, and plans to perform SMBG, and how much control the patient feels they have regarding this task. Thus, diabetes education should include eliciting the patient’s beliefs about self-care, since they are the basis of intention and consequently performance of SMBG. Furthermore, partners may have an impact on how patients manage their diabetes and on adherence to self-care behaviours. Since partners are paramount in a patient’s adherence to treatment, they must be involved in the therapeutic process to learn how to provide suitable support in diabetes management. In fact, in a study involving type 2 diabetes patients, Bastos found that those who attended medical appointments with their spouse regularly showed more adherence and better diabetes outcomes, when compared to patients who attended medical appointments without their partners. As a result, it comes as no surprise that positive support was
also found to be a mediator in the relationship between intentions and adherence to SMBG. This result has major implications for practice. Health professionals must be aware that the involvement of partners in diabetes education helps patients’ management of the disease and promotes their intention to adhere and, consequently, their SMBG.

It would be interesting, in the future, to design a study with type 2 diabetes patients who have no partners – since the literature shows that patients without the support of a partner reveal lower adherence and higher levels of HbA1c – and compare them with patients with partners regarding the performance of SMBG.

Declaration of interests
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References