Spousal Support and Relationship Happiness in Persons with Type 2 Diabetes and their Spouses

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Key Messages: Diabetes affects both the person with the condition and their spouse, who often witness

the difficulties of integrating diabetes care, including dietary self-care, into daily life and their

relationship. Healthy romantic relationships are a central element of general psychological well-being in

adulthood, and not less importantly in adults with type 2 diabetes. The person with diabetes' confidence

in their spouse's support abilities and the spouse's confidence in their own support abilities seems to

contribute to relationship happiness.

Keywords: spousal support self-efficacy; relationship happiness; type 2 diabetes; dietary self-care; actor-

partner interdependence model

Abstract

Objectives: The purpose of this study was to examine the association between the perceptions of spousal support self-efficacy in terms of dietary self-care and relationship happiness.

Methods: Forty-six couples, in which only one spouse has type 2 diabetes, completed questionnaires on perceptions of spousal support self-efficacy and relationship happiness.

Results: Using an actor-partner interdependence model, we found that when persons with type 2 diabetes were more confident in their spouse's ability to provide them with support regarding their dietary self-care, they reported more relationship happiness. We also found that when their spouse without diabetes was more confident in their own abilities to provide such support to their partner, they reported more relationship happiness. However, the person with diabetes' confidence in their spouse's support abilities and the spouse's confidence in their own support abilities were not associated with the other partner's relationship happiness.

Conclusions: This study offers a unique dyadic perspective on the determinants of happiness for couples in which one spouse has type 2 diabetes. The perceived quality of spousal support appears to be associated with relationship happiness in committed couples managing diabetes, regardless of the actual support received or provided.

Introduction

The International Diabetes Federation estimates that approximately 425 million people have diabetes worldwide, and expects that this number will rise to 629 million by the year 2045 [1]. If not properly treated, diabetes can lead to severe health complications, including retinopathy, cardiovascular disease, kidney disease, and foot ulcers [2]. Beyond these physical health challenges, the diagnosis and management of diabetes can psychologically impact both the person with diabetes and their spouse. Indeed, when one spouse has diabetes, both partners may face a variety of complex psychosocial factors when adding diabetes care into their daily lives as a couple [3].

Research has shown that both persons with diabetes and their spouses report experiencing psychological difficulties, including relationship distress and couple dissatisfaction [4, 5]. Relationship distress is associated with lower levels of general well-being and mental health issues, particularly mood disorders, anxiety, and substance abuse [6, 7, 8, 9]. Moreover, relationship problems are among the most frequent reasons for seeking individual therapy [10, 11]. It is therefore essential to better understand the potential effect of type 2 diabetes on both spouses' relationship satisfaction.

It is well known that both spouses are affected in their daily life as a couple by the management of diabetes, especially when dietary self-care is of concern [12]. Given the difficulties of maintaining healthy dietary behaviours, the spouse without diabetes is very likely to be one of the most important sources of support for the person with diabetes. Research exploring the burden of spousal support in difficult situations has shown that this is an area of vital importance when trying to understand the varying levels of couple satisfaction reported by spouses [13]. In this regard, the goal of the current study is to assess the dyadic dynamics of the association between spousal support self-efficacy in terms of dietary self-care (i.e., the person with diabetes' confidence in their spouse's ability to adequately provide support in terms of dietary self-care and the confidence of the spouse without diabetes in their own ability to provide such support to the person with diabetes) and relationship happiness in couples when one person is diagnosed with type 2 diabetes.

Self-efficacy is defined as a person's confidence in their ability to produce specific courses of action to exercise influence over situations that affect their lives [14]. According to Bandura [14], self-efficacy determines people's feelings, thoughts, motivations, and behaviours. Based on Bandura's self-efficacy theory, it was hypothesized that when a person feels more confident in their ability to provide support to their partner with diabetes, the level of support will increase, which, in turn, will results in better dietary self-care and relationship happiness. To our knowledge, no previous study has examined the effect of spousal support self-efficacy on relationship satisfaction in chronically ill people or in their partner.

There have only been a few studies that have explored the relationship between perceived spousal support in general (i.e., provided and received) and relationship satisfaction, including relationship happiness, with chronically ill persons, and even less with a population living with diabetes. Overall, these studies have found that the perception of receiving adequate spousal support is positively correlated with self-reported relationship satisfaction in chronically ill persons [15, 16, 17, 18]. They also found that the perception of receiving adequate support by the chronically ill person was positively correlated with their partner levels of relationship satisfaction [15, 16, 17, 18, 19].

Current study

The goal of this study was to assess the dyadic patterns in the association between spousal support self-efficacy in terms of dietary self-care and relationship happiness with couples where one person is diagnosed with type 2 diabetes. An actor-partner interdependence model (APIM) [20] was applied to estimate actor and partner effects in a given model. An actor effect is considered to be the extent to which one's own score on an independent variable can influence their score on a dependent variable. Similarly, partner effect is considered to be the extent to which one's own score on an independent variable can influence their partner's score on a dependent variable [21]. APIM is the only method of statistical

analysis that can assess actor and partner effects while controlling for the interdependence of the data. For more details on APIM, see the Statistical Analyses subsection.

First, we hypothesized that there would be *actor effects* for the person with diabetes and their spouse without diabetes, including (1) a direct link between the person with diabetes' confidence in their spouse's ability to provide them with support regarding their dietary self-care and their own relationship happiness (see direct path A_1 in Figure 1). We also hypothesized (2) a direct link between spouse's confidence in their own abilities to provide such support to their partner and their own relationship happiness (see direct path A_2 in Figure 1). Second, we hypothesized *partner effects* for both the person with diabetes and their spouse without diabetes, including (3) a direct link between the person with diabetes' confidence in their spouse's ability to provide them with support regarding their dietary self-care and their spouse's relationship happiness (see direct link P_{21} in Figure 1). Finally, we hypothesized (4) a direct link between spouse's confidence in their own abilities to provide such support to their partner and the relationship happiness of the person with diabetes (see direct link P_{12} in Figure 1).

Methods

Participants and procedure

Forty-six heterosexual Canadians with type 2 diabetes and their spouse ($N = 46$ couples) participated in this study (see Table 1 for sociodemographic information). While a sample size of at least 200 participants is ideal according to the guidelines specified by standard practices [22], this was not feasible given the difficulties of recruiting a large sample of couples that met the current study's eligibility criteria. All participants were recruited from a database of a diabetes clinic located within a major hospital in Quebec, which contained the names of persons with diabetes (type 1 and type 2) who had indicated interest in participating in behavioural studies in diabetes ($N = 226$). Of these, 102 met the eligibility criteria. A total of 46 persons with diabetes and their non-diabetic spouses voluntarily agreed to

participate (42 couples were married and four were cohabiting), which constitutes a response rate of 45%. We did not use data from those who were not interested in participating.

All participants conformed to the following eligibility criteria: (a) one of the partners had been diagnosed with type 2 diabetes for at least the past three years; (b) there had been no major changes in diabetes-related medication for the past three months to ensure that the results were independent of adapting to the new medication (e.g., transfer to insulin); and (c) the couple had been cohabiting for at least six months. Participants were excluded if they: (a) did not live with their partner; (b) did not understand English fluently, as identified by their healthcare professional; (c) had been in hospital within the past three months; and (d) had communication or other cognitive difficulties, as identified by their health-care professional.

All eligible persons with diabetes and their spouses who agreed to participate were invited to meet a research assistant either at their diabetes clinic or at their own home. After signing the consent forms, both partners filled out the questionnaires in separate rooms. A research assistant circulated every 15 minutes to answer questions as they filled out the questionnaires. As this study was part of a larger research project, each couple also participated in a videotaped discussion about a diabetes topic that was related to their relationship; however, this data was not used in the current study. Participants received an honorarium of 25 Canadian dollars for their participation. The ethics aspects of this study have been approved by the Research Ethics Committee of an eastern Canadian university.

Measures

Spousal support self-efficacy. The *Perceptions of Spousal Support Efficacy Scale* (PSSES) [23] is a 37-item self-report questionnaire, which is intended to measure the perception of support self-efficacy in terms of dietary self-care. One version assesses the person with diabetes' confidence in their spouse's ability to adequately provide support in terms of dietary self-care. Another version assesses the spouse without diabetes' confidence in their own ability to provide such support to their partner. Both versions

use a scale from 0 (*not at all confident*) to 100 (*totally confident*). A global score was calculated and used in the analyses for both the persons with diabetes and their spouses. Higher scores indicated a greater degree of confidence. High levels of internal consistency were found by Nouwen [23] with a UK sample and in the current study for the person with diabetes (α = .99 and .96, respectively) and their spouse without diabetes (α = .99 and .99, respectively).

Relationship happiness. The fourth item of the *Dyadic Adjustment Scale- 4 items* [24] was used (i.e., "Please circle the number which best describes the degree of happiness, all things considered, of your relationship"). Using a 7-point Likert-type scale, responses ranged from 0 (*extremely unhappy*) to 7 (*perfect*). A higher score indicated a higher perception of the degree of happiness in the relationship.

Statistical analyses

Preliminary analyses were first completed in order to evaluate missing data and outliers. An evaluation of missing data using Little's missing completely at random (MCAR) test was done. We used the expectation maximization method in order to estimate missing values. A Mahalanobis distance test was also carried out to detect outliers. Descriptive statistics were assessed for all sociodemographic information. The means, standard deviations, and Pearson correlations were also assessed for all variables of interest for persons with type 2 diabetes and their spouses separately in order to control for the nonindependence of the data.

We employed an APIM via structural equation modeling (SEM), as described by Kenny and Ledermann [20], to conduct our principal analyses. This method allowed us to test if an individual's score had an influence on their partner's score, while simultaneously controlling for the non-independence of data. Moreover, SEM is particularly useful in assessing dyads that are distinguishable [20]. In the current study, dyads were differentiated by whether they were the person with diabetes or the spouse without diabetes. All hypotheses were tested in one model using a maximum likelihood robust estimator (see Figure 1). The independent variables consisted of (a) the person with diabetes' confidence in their

spouse's ability to provide support in terms of dietary self-care and (b) the spouse's confidence in their ability to provide such support to their partner. Dependent variables consisted of both partner's relationship happiness. This statistical method tests both actor effects (i.e., the extent to which one's own independent variable influences one's own dependent variable) and partner effects (i.e., the extent to which one's own independent variable influences the other partner's dependent variable). Additionally, the use of maximum likelihood estimators with robust standard errors and a robust test statistic for model evaluations allowed us to correct for non-normal distributions [25]. Adhering to the guidelines set by Kenny and Ledermann [20], which recommend using phantom variables (i.e., k parameters), we calculated dyadic patterns in the data to compare actor and partner effects. The k parameter is a ratio of the partner effect on the actor effect, which is computed separately for each partner when studying distinguishable dyads. In total, there were two different k parameters that were estimated: $k_1 = p_{12}/a_1$ for persons with type 2 diabetes and $k_2 = p_{21}/a_2$ for spouses without diabetes (see Figure 1). Bias-corrected bootstrapped 95% confidence intervals (CIs) were also estimated in order to better interpret the k parameters, considering that the distribution of the ratio was likely to be skewed. The principal analyses in our study were calculated with M*plus* Version 7.2 [25].

Results

Preliminary and descriptive results

Results showed that the data may be assumed missing completely at random, $c^2 (26) = 0.00$, $p = 1.00$, and that there were no variables with more than five percent (5%) missing data. There were no multivariate outliers identified. Sociodemographic information are summarized in Table 1. Means, correlations, and standard deviations for persons with diabetes and spouses for spousal support self-efficacy and relationship happiness are presented in Table 2.

Main results

Figure 1 presents the theoretical model of the APIM via the SEM method, showing links between (a) one's confidence in their own or in their spouse's ability to provide support regarding dietary self-care and one's own relationship happiness (i.e., actor effects); (b) one's confidence in their own or in their spouse's ability to provide support in terms of dietary self-care and the spouse's relationship happiness (i.e., partner effects); and (c) the ratio of actor and partner effects, which informs us about existing dyadic patterns in the data (k parameters). All unstandardized standardized results and unstandardized structure coefficients are presented in Table 3. Results showed two significant actor effects: (a) for persons with type 2 diabetes, their confidence in their spouse's ability to support them with their dietary self-care was significantly related to their own degree of relationship happiness (p = .001); and (b) for spouses without diabetes, their confidence in their own ability to provide support to their partner with type 2 diabetes was significantly related to their own degree of relationship happiness (p = .001). However, none of the partner effects were found to be significant: (a) for persons with type 2 diabetes, their confidence in their spouse's ability to support them with their dietary self-care was not significantly related to their spouse's degree of relationship happiness (p = .29); and (b) for spouses without diabetes, their confidence in their own ability to provide support to their partner with type 2 diabetes was not significantly related to the degree of relationship happiness of their partner with type 2 diabetes (p = .17).

Following Kenny and Ledermann's [20] most recent guidelines, we added the k parameters to a second model in order to estimate dyadic patterns. The ratio parameter and bias-corrected bootstrapped 95% CI for persons with type 2 diabetes were k_1 = .52; 95% CI [-.18; 2.65] and were k_2 = -.35; 95% CI [-0.83; 0.50] for spouses without diabetes. One model was tested in order to interpret the k parameters. k_1 CIs for persons with type 2 diabetes included multiple variables (i.e., 0, .5, 1); however, since the partner effect was not significant, we did not set k_1 to the variable closest to its estimate (0.52), which would have been 0.5. As for spouses without diabetes, k_2 CIs also included multiple variables (e.g., -.5, 0, etc.); therefore, because the partner effect was not significant, we did not set k_2 to the variable closest to its estimate (-.36), which would have been -0.5. Given that none of the partner effects were significant, we

set k_1 to 0 and k_2 to 0, and found that this did not worsen the fit, X^2 (2, $N = 46$) = 0.25, SRMR = 0.06, RMSEA = 0.1, 95%CI [0; 32], TLI = 0.94, CFI = 0.98. These results confirmed that for persons with type 2 diabetes and their spouses, their perceptions of spousal support self-efficacy each revealed actor-only patterns.

Discussion

The goal of this study was to use a comprehensive actor-partner model to assess the association between spousal support self-efficacy and relationship happiness in couples where one person is diagnosed with type 2 diabetes. Our findings showed that the confidence of persons with diabetes in their spouse's ability to provide them with support regarding dietary-self-care was associated with their own relationship happiness, and that the the spouse's confidence in their own ability to provide such support was related to their own relationship happiness. These results are consistent with previous studies conducted among healthy couples, which have demonstrated that in times of distress, one's perception of their partner's support is associated with relationship satisfaction in both partners [26, 27]. Results of the current study are also consistent with studies conducted on couples where one partner has a chronic illness. These studies have also found that one's perception of receiving spousal support is positively correlated with their own relationship satisfaction [18, 15]. These findings could be explained in the light of attachment theory. Indeed, research has shown that positive care (e.g., providing comfort, support, and security to each other) is associated with secure a romantic attachment [28]. Moreover, it is also well known that positive care between both partners is one the major determinants of relationship quality [29]. Therefore, it would appear that secure couples are more likely to engage in caregiving behaviours (e.g., offering positive support to their partner) and caregiving behaviours are highly associated with the quality of the relationship.

Contrary to our hypotheses, no *partner effects* were found. Specifically, the person with diabetes' confidence in their partner's ability to provide support was not associated with their spouse's relationship

happiness, and the spouse's confidence in their own ability to provide support was not related to relationship happiness in the person with diabetes. Our findings suggest that relationship happiness in persons with type 2 diabetes could be explained by their perception of the support they receive, rather than the level of confidence in the support abilities reported by their spouse. Similarly, spouse's relationship happiness could be explained by their perception of their support abilities, rather than the confidence in the ability of the spouse without diabetes to give support as perceived by the person with diabetes. In short, regardless of the actual support received or provided, it is the perception of the quality of support that is associated with relationship happiness in committed couples having to manage diabetes. These findings highlight the importance for continued investigations into *perceived* partner support in understanding relationship happiness and mental health. That being said, participants in this sample were in long-term committed relationships and were generally very happy in their relationship, suggesting little variability in this outcome. Thus, future research with larger and more diverse samples are recommended before ruling out any contributing effects of one partner's support on the other's relationship happiness.

Strenghts, limitations, and future studies

The greatest strength of this study is its use of the perspectives collected from both partners within a dyad. Many studies that have incorporated the fields of health psychology and relationship adjustment have often assessed only one partner, and thus narrow the scope of unearthing potential discoveries [27]. By specifically studying one distinct population of people with a single diagnosis of chronic illness (i.e., type 2 diabetes), this allows us to isolate, or at the very least narrow, specific variables within this population, and test whether a link is present between these variables. Despite this study's strengths, some limitations should be outlined. First, the small sample size increases the probability of type II error, which may have limited our ability to find significant partner effects. However, the perception of received and offered spousal support was associated with relationship happiness in persons with type 2 diabetes and their spouse without diabetes, respectively, which supports

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the need for continued research. Due to the use of a correlational design, we cannot infer causality/directionality even though indicators of relationship quality, such as relationship happiness, are often conceptualized as an outcome measure in the field. Moreover, findings from this study should be generalized with caution, as the sample was predominantly comprised of Caucasian individuals involved in long-term committed relationships. Future research would benefit from recruiting more diverse couples in terms of ethnic background, sexual orientation, and levels of commitment. Although we deliberately chose to employ self-report questionnaires to obtain subjective measures of spousal support, the use of data collected from self-report measures pose a limitation (i.e., social desirability bias and experiencing difficulties with recall). To obtain a more complete picture of the role of support in relationship happiness in couples challenged with diabetes, future studies may wish to incorporate both subjective and objective measures of support. Future studies may also seek to use the entire DAS-4 or DAS-32 since this would provide a greater insight into various dimensions of relationship quality beyond that of happiness. In addition to the aforementioned study limitations, there remain several research questions that were not addressed within the current study that could prospectively further deepen insights regarding the association between spousal support and relationship happiness in adults with type 2 diabetes and their partners. Future studies may also seek to examine how relationship happiness associated with clinical variables (e.g., duration of diabetes, diabetes-related complications, and co-morbidity) as well as psychological well-being may impact, explain, precede or follow the association between spousal support and relationship quality. Moreover, although self-efficacy for dietary related spousal support was measured and is the focus of this study, a standardized measure of dietary self-care behaviour would have helped to capture how perceived support impacts actual self-care.

Conclusions

In this study, we examined the association between spousal support self-efficacy and relationship happiness among couples in which one spouse has type 2 diabetes. Using a unique dyadic perspective, we discovered that when persons with type 2 diabetes were more confident in their spouse's abilities to

provide them with support regarding dietary self-care, they also reported more happiness in their relationship. We also found that when the spouse without diabetes was more confident in their own ability to provide their partner with support with respect to dietary self-care, they reported more relationship happiness. Diabetes affects both the person with the condition and their romantic partner, who often witness the difficulties of integrating diabetes care into daily life and their relationship. This study supports the notion that the perception of being supported and of being supportive is crucial for relationship happiness, and provides us with insights into the determinants of the quality of romantic relationships where one spouse has type 2 diabetes.

Funding Statement

Author Contributions

All authors were fully responsible for the manuscript content and editorial decisions. They were involved at all stages of the manuscript development and have all approved the final version.

Author Disclosures

The authors report no conflicts of interest.

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Table 1

Sociodemographic information

Characteristic	Person with type 2 diabetes	S
Sex, *n*		
Male	26	20
Female	20	26
Age in years	63.48 ± 8.38	61.73 ± 13.20
Duration of relationship in years	36.73 ± 10.04	36.73 ± 10.04
Education, *n* (%)		
Grade school	13 (28)	17 (37)
High school	14 (30)	14 (30)
College	6 (13)	8 (17)
University	13 (28)	7 (15)

Note. Data are mean ± *SD* unless otherwise specified.

Table 2

Descriptive statistics of zero-order correlations between spousal support self-efficacy in terms of dietary self-care and relationship happiness reported by persons with type 2 diabetes and their spouses

Measure	*M*	*SD*	*1*	*2*	*3*	*4*
1. Person with diabetes' confidence in their spouse's ability to adequately provide support in terms of dietary self-care	58.93	25.28	1	.56**	.51**	.08
2. Person with diabetes' relationship happiness	3.93	1.41	-	1	.42**	.48**
3. Spouse's confidence in their own ability to provide such support to their partner	67.96	23.05	-	-	1	.40*

4. Spouse's relationship happiness	3.73	1.30	-	-	-	1

Table 3

Unstandardized standardized factor loadings and unstandardized structural coefficients for model

parameters

Parameter estimate	Unstandardized	Standardized	p
$(X \rightarrow Y)$			
Actor effects			
Person with diabetes' confidence in their spouse's ability to provide support regarding dietary self-care → Person with diabetes' relationship happiness	0.02	0.43	.00
Spouse's confidence in their own ability to provide such support → Spouse's relationship happiness	0.03	0.52	.00
Partner effects			
Spouse's confidence in their own ability to provide support regarding dietary self-care → Person with diabetes' relationship happiness	0.01	0.21	.17
Person with diabetes' confidence in their spouse's ability to provide such support → Spouse's relationship happiness	-0.01	-0.20	.29