

Contributors to Depression in Latino and European-American Patients With Type 2 Diabetes

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OBJECTIVE — To determine the independent and cumulative contributions of diabetes and other life stresses on depression and anxiety in Latino and European-American (EA) patients with diabetes.

RESEARCH DESIGN AND METHODS — A total of 75 Latino and 113 EA patients with type 2 diabetes, recruited from managed care settings, were assessed regarding three groups of potential stresses: demographics (age, sex, and education), disease status (functional impact, time since diagnosis, comorbidities, HbA_{1c}, and BMI), and family stress (financial stress, spouse conflict resolution, and family closeness). Dependent variables were depression (Center for Epidemiological Studies–Depression scale [CES-D]) and anxiety (Symptom Checklist [SCL-90]). Multiple regression equations assessed the independent contribution of each predictor on depression and anxiety.

RESULTS — For both ethnic groups, education, functional impact, and financial stress significantly and independently predicted depression; poor spouse conflict resolution was a fourth significant predictor for EA patients only. The equations accounted for a high percentage of variance (43–55%). Excluding education, the same variables predicted anxiety for both ethnic groups. The disease status and family stress variable groups significantly predicted outcomes independently. The relationships among these variables and depression and anxiety generally occurred for all patients, not only for those classified as likely depressed.

CONCLUSIONS — The findings suggest the utility of considering many life stresses, not just diabetes alone, that combine to affect depression and anxiety. We suggest that these effects are experienced cumulatively as general psychological distress for all patients with diabetes, not just those classified as likely depressed. Taken together, the findings emphasize a life-centered, patient-focused approach to the treatment of depression, rather than an exclusive disease-related perspective.

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Many studies have documented the high rate of depression found among patients with diabetes, compared with nonpatient control subjects (1). These reports indicate that >25% of patients with diabetes reach clinical criteria for depression (2), a rate far higher than in the general population. A number of potential explanations to account for this finding have been offered (3–5) that we integrate into three interrelated hypotheses: 1) the intensity and scope of repetitive treatment regimens burden patients and intrude on their ev-

eryday lives; 2) the duration of the disease provides chronic ongoing stress, and the number of disease complications over time increasingly affects the quality of life; and 3) diabetes and depression are parts of a common or linked set of metabolic disorders. These three hypotheses provide a framework for incorporating the results of a large number of studies that show wide variations in the rate of depression among patients with diabetes due to differences in patient demographics, disease characteristics, and other factors that contribute to general psychological distress. In this report, we provide an overview of factors known to affect the rate of depression among patients with diabetes and test an expanded model of predictors of depression that take many of them into account. By organizing many of the factors that contribute to depression in patients with diabetes into an integrated, unified framework, we hope to increase the development of patient-specific psychosocial, behavioral, and pharmacological interventions (6).

A nonexhaustive overview of many of the factors that have been shown to influence the incidence of depression among patients with diabetes is shown in Table 1. The most consistent findings indicate that patients who are women, are ethnic minorities, are of low education or income, are unemployed, are single, have many comorbidities or complications, have poor quality of life, have little social support, have many functional deficits, and/or experience negative life events or other chronic stresses have higher rates of depression than patients without these characteristics. Many of the factors that are linked to depression are not restricted to patients with diabetes. Several studies indicate that the rate of depression is high in patients with other chronic diseases (40,41), such as cardiovascular disease, asthma, and rheumatoid arthritis, compared with normal control subjects, although there are differences in the rates of depression among patients with different chronic conditions (7,42). Therefore, the high rate of depression is not unique to

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Abbreviations: CES-D, Center for Epidemiological Studies–Depression scale; EA, European-American; SCL-90, Symptom Checklist.

A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

Table 1—An overview of factors affecting the prevalence of depression in patients with diabetes

Patient demographics	
● Sex:	generally higher rates for females (4, 7–12)
● Race/ethnicity:	higher rates for minorities (8, 13–15)
● Marital status:	higher rates for singles (4, 16)
● Age:	mixed findings, somewhat higher rates in the middle years and somewhat lower rates in the older years (4, 11, 17, 18, 40)
● Social class (education, income):	higher rates at lower levels of social class (8, 12, 19, 20, 57)
● Employment status:	higher rates for the unemployed (12)
Disease characteristics	
● Number of comorbidities/complications:	mixed findings with a trend toward higher rates with more comorbidities/complications (4, 11, 12, 18, 20–32, 40, 57)
● Type 1 versus type 2 diabetes:	mixed findings, may be related to presence or absence of lifetime history of depression (33, 57)
● Degree of disability:	high rates with high disability (24)
● Pain, discomfort, physical impairment:	high rates associated with each (42)
Social support: low depression associated with high social support (17)	
General psychological disturbance: depression associated with.	
● Anxiety	(57)
● Health perceptions	(34)
● Negative life events	(35)
● Adverse social circumstances	(12)
● Illness intrusiveness	(36)
● Affect and quality of life	(16, 17, 37, 38)
● Well-being	(39)

patients with diabetes and may be related to the general psychological distress of living in a complex world and having a major chronic disease.

Considering the number of factors that affect the prevalence of depression among patients with diabetes, it may be difficult to identify a single explanation that accounts for the high rate of depression that is observed among these patients. Instead, it may be more useful to adopt a broader, cumulative, biopsychosocial stress model to account for the findings. This approach suggests that multiple disease, personal, social, and community factors combine to affect depression in patients with diabetes. Therefore, depression among these patients is not exclusively disease-related.

We evaluate a cumulative approach to depression in patients with diabetes with two research questions. First, if the high rate of depression observed among patients with diabetes is the result of high, multisource, cumulative stress, then we expect multiple independent linkages between depression and a variety of disease, financial, family, and other stresses. We expect that depression in patients with diabetes is not exclusively disease-related.

Second, if depression in patients with diabetes is indeed only one part of a broader syndrome of general psychological distress, then we expect that the significant predictors of depression that we find in the analysis of the first research question also will be significant predictors of other aspects of distress, such as anxiety. Depression in patients with diabetes, we expect, is not the exclusive outcome of high cumulative stress. To explore the effects of life context on the linkage between depression and diabetes more broadly, we evaluate these two research questions in patients from two ethnic groups: Latinos and European-Americans (EAs). We expect differences in the variables that predict depression in these two ethnic groups because different cultural settings often expose patients to different stresses (43).

RESEARCH DESIGN AND METHODS

Subjects

As part of a secondary-prevention study of family effects on disease management, patients who met the following criteria were identified by billing and clinical databases from 11 health facilities: diag-

nosed with type 2 diabetes, time since diagnosis between 1 and 9 years; age between 25 and 62 years; no major diabetes complications (proliferative retinopathy, any cerebrovascular accident or myocardial infarction within 12 months, renal insufficiency, amputations); patient and consenting spouse or partner had been cohabiting for a minimum of 3 years (to ensure relationship stability); patient and spouse/partner identified themselves as either Latino (from Mexico or Central America) or EA.

After receiving an introductory letter, patients were screened for inclusion criteria by phone, and a home visit for eligible patients and spouses was scheduled to introduce the project and review informed consent. The project included a 1.5-h home visit, completion of questionnaires in the home (45 min), and a 2.5-h office visit for both the patient and spouse/partner.

Screening identified 262 eligible patients, 187 of which agreed to participate (71% acceptance rate). The final sample comprised 113 EA and 75 Latino patients and their spouse/partners (Table 2). Most patients who refused to participate ended the telephone call before screening was completed. Most stated lack of time as the primary reason for refusal.

Independent variables

Eleven variables were grouped into three stress-related areas: patient demographics, disease indicators, and family level stress. Each variable had shown significant relationships with depression in patients with diabetes in previous research (Table 1). Within each area, individual variables were selected if they made good conceptual sense as potential stressors and if they displayed low intercorrelations with the other variables. All scales were translated into Spanish by one translator and were translated back into English by a second translator. Differences were reconciled into a final Spanish translation (44). Items then were reviewed by focus groups of Latino patients, and final protocols were prepared. Latino patients elected to use either the Spanish or English version.

Demographic indicators included patient age, sex, and education, the latter being used as a surrogate for social class. Education was scored as years of schooling. Disease indicators included five variables. Diabetes functional impact was

Table 2—Characteristics of the sample

	Latinos	EAs	Statistic	P
n (M/F)	75 (49/26)	113 (67/46)	$\chi^2 = 0.48$	0.490
Age (years)	48.41 \pm 8.91	51.69 \pm 7.68	$t = 2.71$	0.007
Income*	4.25 \pm 1.61	6.98 \pm 1.63	$t = 11.10$	0.000
Education†	3.13 \pm 2.05	5.82 \pm 1.34	$t = 10.99$	0.000
Years since diagnosis	4.16 \pm 2.31	4.31 \pm 2.39	$t = 0.46$	0.640
HbA _{1c} (%)	8.96 \pm 2.12	8.18 \pm 1.59	$t = 2.92$	0.004
Functional impact	62.38 \pm 8.02	63.57 \pm 6.10	$t = 1.17$	0.243
Financial stress	16.93 \pm 5.61	16.05 \pm 5.67	$t = 1.06$	0.292
Conflict resolution	12.47 \pm 5.64	12.19 \pm 4.90	$t = 0.36$	0.716
Family closeness	30.21 \pm 4.59	30.27 \pm 4.60	$t = 0.09$	0.927
BMI	31.79 \pm 5.29	31.06 \pm 7.17	$t = 1.33$	0.186
CES-D	12.43 \pm 4.01	9.87 \pm 3.62	$t = 2.22$	0.028
SCL-90 anxiety	14.24 \pm 4.61	12.73 \pm 3.14	$t = 2.69$	0.008

Data are n or means \pm SD. *Income values are as follows: 1 = <\$5,000, 2 = \$6,000–10,000, 3 = \$11,000–20,000, 4 = \$21,000–30,000, 5 = \$31,000–\$40,000, 6 = \$41,000–50,000, 7 = \$51,000–75,000, 8 = \$76,000–100,000, 9 = >\$100,000, †education was categorized as follows: 1 = \leq grade 6, 2 = grades 7–9, 3 = grades 10–11, 4 = H.S. diploma, 5 = some college, 6 = 4-year college degree, 7 = some graduate education, 8 = postgraduate degree.

assessed by the 19-item functional impact subscale of the Diabetes Quality of Life questionnaire developed by the Diabetes Control and Complications Trial (45) (α : EA = 0.79; Latino = 0.85). It assesses the degree to which diabetes places perceived functional burdens on the patient's personal, work, and social life. High scores reflect good functioning or low impact. HbA_{1c}, BMI, time since diagnosis, and number of comorbidities, all of which can serve as diabetes-related stresses, were also included. Family level stress included three variables. Financial stress was assessed by an eight-item scale developed by Pearlin et al. (α : EA = 0.92; Latino = 0.88) (46). On a four-point scale, patients rate the degree to which they feel bothered, worried, etc. about the current financial situation of their family. Spouse conflict resolution is a five-item, seven-point rating scale that assesses the degree to which the respondent believes that conflicts with his/her spouse about diabetes are not effectively resolved (α : EA = 0.74; Latino = 0.64) (47). High scores reflect poor resolution. Lack of family closeness or family support are often reported as stressful to patients with diabetes. We used family closeness, a 9-item subscale of a 23-item, factor-analyzed family adjective checklist (α : EA = 0.84; Latino = 0.85). Respondents are asked to rate on a four-point scale how each adjective currently describes their family (e.g., supportive, sharing).

Dependent variables

The Center for Epidemiological Studies–Depression scale (CES-D) (48) is a 20-item measure of depression during the last 4 weeks (α : EA = 0.89; Latino = 0.85). Anxiety was assessed by the anxiety subscale of the Symptom Checklist (SCL-90) (49). It includes 10 items, each rated on a four-point scale (α : EA = 0.79; Latino = 0.85).

Data analysis

For the first research question, concerning predictors of depression, each of the 11 variables was entered into a single block of a multiple regression equation, with CES-D scores as the dependent vari-

able. The multiple regression analysis was repeated for the second research question, this time using SCL-90 anxiety scores as the dependent variable. There was no evidence of multicollinearity among the moderately correlated predictors.

The analyses were first conducted separately for Latino and EA patients. Ethnic differences involve a host of contextual effects that are not easily reduced to a set of variables that can be controlled in a single multivariate analysis (44,50). A second set of analyses examined whether the unstandardized regression weights were different for the two ethnic groups. This analysis combined the two ethnic groups and tested whether ethnic group by predictor variable interaction terms added significantly to explained variance in depression and anxiety.

RESULTS

Initial analyses

EA patients were older ($t = 2.71$, $P < 0.007$), were better educated ($t = 10.00$, $P < 0.001$), had higher family incomes ($t = 11.10$, $P < 0.007$), had lower HbA_{1c} levels ($t = 2.92$, $P < 0.004$), were less depressed ($t = 2.22$, $P < 0.028$), and were less anxious ($t = 2.690$, $P < 0.008$) than Latino patients (Table 2). Using a cutoff of 16 or higher on the CES-D (51), the percentage of patients with likely depression was significantly different in the two ethnic groups: 17.2% of EA patients ($n = 20$) and 31.6% of Latino patients ($n = 24$) reached the criterion for likely depression ($\chi^2 = 5.340$, $P < 0.021$).

Table 3—Correlations with depression (CES-D) and anxiety (SCL-90)

	Latinos	EAs	Total sample
n	75	113	188
Age	−0.232*/−0.222*	−0.050/−0.045	−0.158*/−0.169*
Sex (female = 2, male = 1)	0.206/0.198	0.118/0.041	0.028/0.100
Education	−0.192/−0.046	−0.118/−0.084	−0.218‡/−0.166*
Years since diagnosis	0.007/−0.007	−0.053/0.071	−0.034/−0.045
BMI	0.099/0.102	0.129/0.070	0.100/0.058
HbA _{1c}	−0.051/−0.094	0.088/−0.081	0.054/−0.044
Number of complications	0.144/0.119	0.066/0.096	0.071/0.070
Functional impact	−0.580‡/−0.502‡	−0.534‡/−0.508‡	−0.542‡/−0.509‡
Conflict resolution	0.233‡/0.226*	0.418‡/0.383‡	0.333‡/0.286‡
Family closeness	−0.239‡/−0.130	−0.275‡/−0.109	−0.258‡/−0.132
Financial stress	0.556‡/0.567‡	0.534‡/0.442‡	0.546‡/0.498‡

Data are correlations with depression and anxiety before and after the diagonal, respectively. * $P < 0.05$; † $P < 0.01$; ‡ $P < 0.001$.

Table 4—Multiple regression models predicting depression and anxiety for Latinos and EAs

	Depression				Anxiety			
	Latinos		EAs		Latinos		EAs	
	β	<i>P</i>	β	<i>P</i>	β	<i>P</i>	β	<i>P</i>
Age	-0.024	0.802	0.011	0.876	-0.099	0.350	0.024	0.766
Sex	0.028	0.799	-0.074	0.291	-0.169	0.166	-0.106	0.186
Education	-0.251	0.010	-0.137	0.052	-0.080	0.437	-0.128	0.110
Time since diagnosis	0.076	0.412	-0.030	0.706	-0.018	0.858	0.043	0.640
BMI	0.046	0.701	0.110	0.131	-0.134	0.309	0.071	0.0389
Number of comorbidities	0.017	0.857	-0.105	0.153	0.104	0.315	-0.006	0.938
HbA _{1c}	-0.091	0.369	0.068	0.374	-0.156	0.159	-0.127	0.141
Functional impact	-0.442	0.000	-0.394	0.000	-0.347	0.003	-0.404	0.000
Financial stress*	0.369	0.001	0.306	0.000	0.427	0.001	0.205	0.022
Conflict resolution*†	-0.081	0.424	0.192	0.014	-0.107	0.330	0.246	0.006
Family closeness	-0.123	0.201	-0.116	0.130	-0.061	0.561	0.048	0.579
	<i>R</i> = 0.73	<i>R</i> ² = 0.54	<i>R</i> = 0.74	<i>R</i> ² = 0.55	<i>R</i> = 0.68	<i>R</i> ² = 0.46	<i>R</i> = 0.66	<i>R</i> = 0.43
	<i>F</i> = 6.74	<i>P</i> < 0.000	<i>F</i> = 11.41	<i>P</i> < 0.000	<i>F</i> = 4.79	<i>P</i> < 0.000	<i>F</i> = 6.81	<i>P</i> = 0.000

*Statistically significant difference between Latinos and EAs on unstandardized coefficients for anxiety; †statistically significant difference between Latinos and EAs on unstandardized coefficients for depression.

There were no significant differences in rates of likely depression between males and females both across and within ethnic groups. The correlation between depression and anxiety for Latinos and for EAs was 0.80 and 0.73, respectively.

Correlations with depression

Significant positive correlations with depression were found for the total sample combined for conflict resolution ($r = 0.333$) and financial stress ($r = 0.546$), and significant negative correlations were found for age ($r = -0.158$), education ($r = -0.218$), and family closeness ($r = -0.258$) (Table 3). No significant zero-order relationship was found between depression and years since diagnosis, BMI, HbA_{1c}, and number of complications. Correlations with depression and anxiety for each ethnic group are also included in Table 3.

Multiple regression findings

The 11 predictors accounted for >50% of the variance in CES-D scores in the equations for Latinos ($R^2 = 0.54$) and for EAs ($R^2 = 0.55$) (Table 4). For Latino patients, low education, high functional impact of diabetes, and high financial stress significantly and independently predicted CES-D scores. These same three variables plus poor spouse conflict resolution about diabetes significantly and independently predicted CES-D scores among EA patients. The second step of the multiple regression equation indicated that the un-

standardized coefficient for conflict resolution was significantly different between EAs and Latinos: poor spouse conflict resolution was significantly related to depression among EAs but not among Latinos.

The 11 predictors accounted for 43 and 46% of the variance in SCL-90 anxiety scores for Latinos and EAs, respectively. For Latino patients, high diabetes functional impact and high financial stress significantly and independently predicted anxiety. These same two variables plus poor family conflict resolution significantly and independently predicted anxiety for EA patients. The second step of the multiple regression equation indicated that two of the unstandardized regression coefficients were statistically different in the two ethnic groups: poor spouse conflict resolution was positively associated with anxiety only for EAs and not for Latinos. Although financial stress was significantly and positively associated with anxiety for both ethnic groups, the association was significantly greater for Latinos than for EAs.

Patient age, sex, time since diagnosis, number of comorbidities, HbA_{1c}, family closeness, and BMI did not significantly predict depression or anxiety for Latino or EA patients, when analyzed within the context of the other variables in the equations.

We also tested the independent contributions of each of the three blocks of variables (demographics, disease indica-

tors, and family level stress) by assessing the unique variance associated with each block, after controlling for the variance in the other two blocks. In effect, each block was entered as the last step in a multiple regression equation so that the unique variance of each could be observed after controlling for the other two.

For EA patients, the incremental variance accounted for by the demographic, disease indicator, and family level stress blocks was 2.3% ($P = 0.17$), 14.1% ($P < 0.0001$), and 18.5% ($P < 0.0001$), respectively. Most of the variance in the disease indicator block was attributable to diabetes functional impact (12.9%, $P < 0.001$). For Latinos, the unique variance attributable to the three blocks for depression, respectively, was 5.5% ($P = 0.07$), 14.0% ($P = 0.004$), and 9.7% ($P < 0.01$). Again, most of the variance in the disease indicator block was attributable to diabetes functional status (13.3%, $P < 0.0001$). Parallel findings occurred for anxiety. For EA patients, the unique variance accounted for by the demographic, disease indicator, and family stress blocks was 2.6% ($P = 0.22$), 14.6% ($P = 0.0003$), and 10.6% ($P < 0.001$), respectively. Diabetes functional status accounted for most of the variance in the disease indicator block (13.5%, $P < 0.0001$). For Latino patients, the percentages were 3.4% ($P = 0.28$), 11.9% ($P = 0.03$), and 11.3% ($P = 0.01$), respectively. Diabetes functional status again ac-

counted for most of the variance in the disease block (8.2%, $P = 0.003$).

Supplementary analyses

Considering these findings, we asked if the 11-variable model operated across the entire range of depression and anxiety scores and not just at the high end of each of the two distributions, e.g., major depressive disorder or likely depression. This question is important because it directs clinicians to address the effects of stress on mood either only among patients above a given criterion, such as major depressive disorder, or among all patients with diabetes, regardless of level of CES-D or SCL-90 score. Because we wanted to test for differences between high and low depression and anxiety scores for each ethnic group separately and because a split in the distribution of CES-D scores at 16 (the criterion for likely depression) would not give us sufficient power to do so, we elected to use a median split of the distribution of anxiety and of depression scores for each ethnic group. Using hierarchical multiple regression with interaction terms, we then tested to determine whether any of the 11 coefficients from the model were significantly different between the high and low depression and anxiety groups for each ethnicity separately. Of the four analyses run, anxiety and depression for each ethnic group, only one interaction term reached statistical significance: for Latinos only, financial stress was significantly related to depression only in the high depressed group. These findings suggest that with the exception of financial stress for Latinos, the variety of stress-related variables in the model predicted both anxiety and depression along the entire continuum of scores and not only for highly depressed or anxious patients alone.

CONCLUSIONS— We hypothesized that there would be multiple independent predictors of depression and anxiety for patients with diabetes, not just predictors from diabetes-related stresses alone. Supporting this hypothesis for depression, we find that patient education, functional impact of diabetes, and financial stress independently predict CES-D scores for both ethnic groups; family stress, associated with poor family conflict resolution around diabetes, is the fourth significant predictor in EA pa-

tients. Supporting this hypothesis for anxiety, we find that essentially the same variables that independently predict depression also independently predict anxiety. The amount of variance in depression and in anxiety accounted for by the equations is considerable: >50% for depression and >43% for anxiety. Most of the stress-related contributors to depression that we studied exert their influence along the entire continuum of general psychological distress for both ethnic groups, not just for those patients with high levels of anxiety or depression.

We also find that controlling for demographics and disease- and family-related stresses contribute significant, independent, and relatively equal amounts of variance to overall depression and anxiety scores. This highlights the importance of family and other life context stresses, and not just disease-related issues alone, when developing interventions that address general psychological distress among patients with diabetes. Also, perceived functional limitations of diabetes are the most powerful contributors to anxiety and depression among the disease-related stressors for both ethnic groups, accounting for more variance than time since diagnosis, HbA_{1c}, BMI, and number of comorbid conditions. We speculate that the perception or experience of functional impact on patients' lives may be a far greater contributor to psychological distress than more objective measures of disease status.

Notably missing from the list of significant regression weights are two groups of variables for Latino patients and one group for EA patients. Neither of the two biologically related variables included in the equations, HbA_{1c} and BMI, significantly predict depression or anxiety for Latino or EA patients. Zero-order correlations between these two variables and depression also are not significant.

The absence of significant linkages between the two family variables and both depression and anxiety for Latino patients was unexpected, considering our previously reported findings of significant linkages between a set of family descriptors and a number of self-management outcomes for this ethnic group (43). The finding of a significant association between spouse conflict resolution for EAs but not for Latinos may be due to differences in the cultural norms that govern conflict and its expression in the two eth-

nic groups. For example, using videotaped observations of couple interactions, we found previously that EA and Latino couples approach conflict about diabetes management in very different ways. Specifically, Latino couples display more warmth, less hostility, more off-task behavior, and less problem resolution than EA couples (52). Family loyalty, concerns for ease in relationships, and family closeness, three strongly valued cultural imperatives (53–55), can often lead to indirect methods of conflict resolution and problem-solving. Overtly acknowledging intrafamilial conflict may violate the values of loyalty and respect that are emphasized by Latinos (56), thus reducing the associations between conflict scores and outcomes among Latino patients. These findings also highlight the need to address issues of ethnicity and culture in the design of behaviorally oriented diabetes interventions.

These findings encourage us to view depression within the broad context of general psychological distress and to observe psychological distress within the broad context of general life functioning. Psychological distress refers to the stresses associated with work, finances, and family, as well as diabetes. This orientation to general psychological distress has three implications for the clinical care of patients with diabetes. First, it widens the lens of patient evaluation from an exclusive disease focus to a general life context perspective. With this orientation, it is as important to assess family, work, and economic aspects of a patients' life context as it is to assess disease-related distress. Second, it expands the assessment of the patient's subjective experience from depression alone to general psychological distress. This may include anxiety, poor general well-being, or reduced quality of life. Third, it increases the number of targets for intervention from dealing with diabetes exclusively to addressing other non-disease-related problems, such as work, finances, and family relationships. For example, disease management, with its related stresses, may be less burdensome to patients if family, parental, work, or financial stresses are addressed. Intervention, within this perspective, therefore, becomes patient-related rather than exclusively disease-related.

Several issues must be considered when viewing these findings. First, both Latino and EA patients in this study were

relatively early in their disease and did not have severe diabetes complications. Predictors of general psychological distress may shift over time along each patient's disease trajectory as different demands and burdens are experienced. Second, we report data only from one point in time, and this has two consequences for generalizing the findings to other clinical samples. First, the predictor variables cannot be considered from our data alone to be indicators of risk for subsequent psychological distress. At present, the findings refer only to contemporaneous relationships. Second, Peyrot and Rubin (4) reported that only 13% of patients in their sample scored positively for depressive symptoms over three time points, and they highlighted the importance of identifying persistent versus episodic depression over time as a risk indicator (57). Episodic versus persistent depression was not accounted for in our data.

Our findings suggest the utility of considering many general life stresses, not just diabetes alone, that challenge the individual's adaptive capacities and lead to negative behavioral and emotional outcomes. We suggest that the effects of general life and diabetes-related stresses are experienced cumulatively as general psychological distress and not only as depression. Also, the findings highlight the importance of these factors for all patients with diabetes, not just those classified as likely depressed. Taken together, the findings emphasize a life-centered, patient-focused approach, rather than an exclusive disease-related perspective.

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