

Depression Treatment and Satisfaction in a Multicultural Sample of Type 1 and Type 2 Diabetic Patients

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OBJECTIVE — To assess rates of depressive symptoms, depression treatment, and satisfaction in a multicultural sample of individuals with type 1 and type 2 diabetes.

RESEARCH DESIGN AND METHODS — This study was conducted with a cross-sectional community-based survey design.

RESULTS — The sample ($n = 221$) was predominantly female (60.3%), had type 2 diabetes (75%), and was middle class with a mean (\pm SD) age of 54 ± 12 years. A total of 53% were white. Depressive symptoms were assessed using the Center for Epidemiologic Studies Depression Scale (CESD) (mean 16.4 ± 11.3). Using conservative thresholds (CESD score ≥ 22), 25.3% of participants reported clinically significant depression. Rates of depression did not differ by ethnic group or diabetes type. The majority (76%) of depressed participants reported treatment (52% antidepressants, 63% mental health providers, 19% alternative healers, and 15% herbal remedies). African Americans were less likely to report any depression treatment, to receive antidepressant medications, or receive treatment from a mental health professional compared with whites. Participants with high depressive symptoms reported general satisfaction with depression treatment experiences.

CONCLUSIONS — High rates of depressive symptoms were observed across ethnic groups, yet significant differences in use of depression treatment existed across ethnic groups. Those seeking depression treatment reported satisfaction with a variety of depression treatment modalities. Increased depression screening and treatment may be beneficial for ethnically diverse patients with type 1 and type 2 diabetes.

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Depression is two times greater in patients with diabetes than in the general population, with similar rates found in patients with type 1 (21.3%) and type 2 (27.0%) diabetes (1). The majority of studies reporting rates of depressive symptoms have utilized white middle class samples (2). A limited number of studies have examined rates of self-reported depression in culturally diverse samples. For example, Gary et al. (3) found rates of self-reported depressive symptoms in excess of 30% among African Americans with type 2 diabetes, with similar rates found in a sample of African

Americans with type 1 diabetes (4). Comparable rates have been reported (5–7) in Latino and Asian-American samples. More work is needed to document the severity and impact of depressive symptoms in multicultural samples of patients with diabetes.

The costs of comorbid diabetes and depression are significant. Comorbid depression has been found to be associated with greater functional disability (8); decreased adherence to dietary, exercise, medication, and self-monitoring of blood glucose recommendations (9,10); hyperglycemia; worsened diabetes complica-

tions (11–13); increased health care costs (9); and mortality (14).

The efficacy and effectiveness of depression treatment in patients with type 1 and type 2 diabetes have been demonstrated in single randomized controlled trials (15–20) and innovative large-scale randomized case management intervention trials (21,22). However, little is known about patient satisfaction with depression treatment in multiculturally diverse diabetic community samples. In the recent Pathways Study, ~60% of members of a health maintenance organization with comorbid diabetes and depression reported satisfaction with either the usual care or intervention depression treatment at baseline (23). Nearly half of depressed patients (54% usual care and 46% intervention) reported use of an antidepressant medication in the 3 months before study entry (23). Little is known about depression treatment experiences and satisfaction with treatment across a range of health systems or across ethnically diverse groups with diabetes and depression.

The purpose of the current study was to examine rates of current depressive symptoms, treatment experience, and satisfaction with depression treatment in a sample of multiculturally diverse individuals with type 1 and type 2 diabetes. The following were the study objectives: 1) to document rates of current depressive symptoms in a multiculturally diverse sample of convenience, 2) to document rates of depression treatment among patients reporting high levels of current depressive symptoms, and 3) to assess satisfaction with depression treatment in patients with high levels of current depressive symptoms.

RESEARCH DESIGN AND METHODS

A convenience sample was drawn from attendees of the American Diabetes Association Diabetes Expo in two large urban areas in the northeastern U.S. Attendees were approached to participate in the study as they passed the booth sponsored by the authors (M.d.G., J.W.). The purpose of the study was explained. Inclusion criteria included men

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Abbreviations: CESD, Center for Epidemiologic Studies Depression Scale.

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

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and women aged ≥ 18 years and currently diagnosed with type 1 or type 2 diabetes. Those who consented to participate completed paper and pencil questionnaires. Participants were paid \$10.00 for their time.

Participants completed the following questionnaires

Depression. The Center for Epidemiologic Studies Depression Scale (CESD) is a 20-item pencil and paper self-report assessment of depressive symptoms in which participants rated the presence and extent of symptoms during the preceding 7 days (24). Symptoms were rated on a 4-item Likert scale ranging from 1 = rarely or none of the time (<1 day) to 4 = most of the time (5–7 days of the past week) and summed to form the total score. Higher scores indicated greater depressive symptoms. A score of ≥ 22 has demonstrated reasonable discriminant validity between clinically documented cases of depression and noncases in medical populations (25,26). Interitem and item-scale correlations have demonstrated good reliability in general population samples (coefficient $\alpha = 0.85$) (19). Test-retest correlations have been reported to be $r = 0.57$ within an 8-week retest interval (24). Use of the CESD with African-American samples has yielded acceptable levels of reliability (27).

Depression treatment history. Participants completed items that assessed experiences with depressive symptoms and treatment modalities. Questions were designed for the purposes of this study.

Economic resources. Economic resource data were collected including employment status, total annual income, home ownership, existence of a checking and savings account, total savings, and existence of extreme changes to income (28).

Statistical analyses

χ^2 and Student's *t* tests were conducted to assess systematic differences between data collection sites. Data collection site was used as a covariate in subsequent multivariate analyses. Bivariate analyses were conducted to assess differences by diabetes type on depression, economic resource, and mental health treatment variables.

To evaluate differences in treatment utilization and satisfaction with treatment across ethnic groups, participants were categorized into four self-identified groups: white (non-Latino), African American, Latino/Hispanic, and others. "Others" was composed of participants

Table 1—Demographic characteristics by data collection site and total sample

	Site 1	Site 2*	Total sample
Age (years)	50.7 \pm 11.5	56.7 \pm 11.7†	53.9 \pm 11.9
Sex			
Male	44 (43.1)	43 (36.7)	87 (39.7)
Female	58 (56.9)	74 (63.3)	132 (60.3)
Ethnicity			
White	29 (28.2)	87 (75.0)†	116 (52.9)
African American	48 (46.6)	18 (15.5)	66 (30.1)
Latino/Hispanic	17 (16.5)	2 (1.7)	19 (8.7)
Other	9 (8.7)	9 (7.7)	18 (8.2)
Education			
Less than high school	7 (6.9)	6 (5.1)	13 (6.0)
High school diploma/GED	19 (18.8)	24 (20.5)	43 (19.7)
Trade school	2 (1.9)	7 (5.9)	9 (4.1)
Part college	32 (31.7)	36 (30.8)	68 (31.2)
4-year college degree	21 (20.8)	18 (15.4)	39 (17.9)
Masters or postdegree	18 (17.8)	26 (22.2)	44 (20.2)
Income (U.S. dollars)			
0–20,000	17 (17.5)	22 (20.6)	39 (19.1)
21,000–40,000	32 (32.9)	36 (33.6)	68 (33.3)
41,000–60,000	26 (26.8)	20 (18.7)	46 (22.6)
61,000–80,000	11 (11.3)	16 (14.9)	27 (13.2)
>80,000	11 (11.3)	13 (12.2)	24 (11.8)
Home ownership	46 (45)	89 (76.2)†	135 (61.9)
Diabetes type			
Type 1	26 (25)	29 (24.8)	55 (24.9)
Type 2	78 (75)	88 (75.2)	166 (75.1)
Diabetes treatment type			
Diet only	14 (13.5)	13 (11.1)	27 (12.2)
Oral agents	53 (50.9)	57 (48.7)	110 (49.8)
Insulin	23 (22.1)	24 (20.5)	47 (21.3)
Combination therapy	12 (11.5)	16 (13.7)	28 (12.7)
Other	2 (1.9)	7 (6)	9 (4.0)
BMI (kg/m ²)	30.6 \pm 6.8	31.5 \pm 7.2	31.1 \pm 7.1
Currently has medical insurance	94 (92.2)	107 (92.2)	201 (92.2)
Currently has mental health insurance	66 (66)	77 (67.5)	143 (66.8)

Data are *n* (%) or means \pm SD. * χ^2 and Student's *t* test comparisons by site; †*P* < 0.001.

who self-identified as Asian-Pacific Islander or mixed ethnic heritage (8.1%). ANCOVA was conducted to evaluate differences in depression scores by ethnic groups after accounting for sex, site, level of education, insurance status, and income as covariates. Except where indicated in the text, self-identified whites served as the reference group in logistic regression analyses comparing ethnic groups on outcome variables.

Logistic regression analyses were conducted using SPSS 12.0 for Windows to assess differences across ethnic groups in mental health treatment and satisfaction with treatment among participants reporting high depressive symptoms. Sex, site, and insurance status were entered into the logistic regression analyses as initial covariates in order to control for sys-

tematic variance. Overall model fit was evaluated using the likelihood ratio χ^2 statistic, which compares the full model with all variables to a simple model with only the intercept term. Model comparisons were conducted by subtracting the $-2 \log$ -likelihood of the full model from the reduced model and computing likelihood ratio χ^2 statistics. Statistical significance of individual predictor parameters was assessed using Wald's χ^2 (χ^2_w). Cox and Shell's R^2 (R^2_{cs}) were used to assess the strength of the association of the predictor with the outcome variable (29).

RESULTS

Sample characteristics

Two hundred twenty-one participants completed questionnaires (*n* = 104 from

site 1; $n = 117$ from site 2). Demographic characteristics for site 1, site 2, and the combined total sample ($n = 221$) are shown in Table 1. Bivariate analyses of demographic and depression variables indicated that site 1 participants were younger with greater ethnic diversity, were younger at age of onset of diabetes, and had lower likelihood of home ownership compared with site 2 participants. No other demographic or depression variables differed by data collection site. The samples were combined for subsequent analyses. Data collection site was used as a covariate in all logistic regression analyses.

Demographic characteristics for the total sample indicated that participants were predominantly female (60.3%) with a mean (\pm SD) age of 54 ± 12 years. Approximately half of the sample self-identified as white (52.9%), with 30.1% identifying as African American, 8.7% Latino, and 9.1% as other. The sample was predominantly middle class, with 56% of participants reporting an income range between \$21,000 and \$60,000 per year. Sixty-two percent of participants reported home or apartment ownership.

Twenty-five percent of participants reported a high school education or less. Seventy-five percent of participants reported a diagnosis of type 2 diabetes, with the majority of patients identifying treatment with oral agents (49.8%, insulin 21.3%, diet only 12.2%, or combination therapy 12.7%). The mean BMI was 31.1 ± 7.1 kg/m². The majority of participants reported current access to health (92.2%) and mental health (66.8%) insurance coverage.

Rates of depressive symptoms

The mean CESD score was 16.4 ± 11.3 (response range 0–50). Using conservative thresholds (CESD score ≥ 22), 25.3% of participants reported high levels of current depressive symptoms (i.e., high depression). Participants were also asked about the existence of one or more episodes in their lifetime of depression (defined as symptom duration of ≥ 2 weeks). The majority of participants (53%) reported a lifetime history of depression. Depression characteristics are shown in Table 2.

Evaluation of rates of depressive symptoms by ethnic group indicated that 25% percent of African Americans were classified as having high depressive symptoms, as were 24% of whites, 31.6% of Latinos, and 27.8% of others. ANCOVA

Table 2—Depression treatment and satisfaction characteristics for patients with high depressive symptoms ($n = 56$)

Depression symptom characteristics	
CESD score	32.8 \pm 7.3
Presence of lifetime depression symptoms	50 (89)
Self-reported diagnosis of depression by physician	32 (65)
Currently prescribed medication by physician for depression	10 (17)
Self-reported use of depression treatment	
Any depression treatment	43 (76)
Antidepressant medication	29 (52)
Mental health providers	34 (63)
Herbal remedies	8 (15)
Alternative healers	10 (19)
Treatment satisfaction	
Antidepressant medication	17 (63)
Mental health provider	20 (59)
Herbal remedies	3 (38)
Alternative healers	8 (80)

Data are n (%) or means \pm SD.

indicated no significant differences in mean depression scores for the main effect of ethnic group ($F = 1.34$, $P = 0.26$) after accounting for sex, income, health insurance, site, and level of education as covariates. Logistic regression analyses were conducted to assess differences in depression status (high depression versus low depression) across ethnic groups. Depression rates did not significantly differ across ethnic groups ($P = 0.43$) after accounting for the effects of sex, income, health insurance, site, and level of education. No significant differences were observed in depression rates by diabetes type (30.9% type 1 diabetes, 23.5% type 2 diabetes, $P = 0.27$).

Depression treatment experience

Experience with depression treatment was evaluated for patients who reported high levels of depressive symptoms ($n = 56$). Participants were queried about their experience with antidepressant medications, mental health providers, herbal remedies (e.g., St. John's wort), and alternative healers (e.g., pastors, faith healers) for the treatment of depression. Approximately 76% reported experience with one or more types of depression treatment. A total of 52% reported treatment with antidepressant medications, 63% from mental health providers, 15% with herbal remedies, and 19% from alternative healers. Forty-three percent of the participants reported experience with two or more types of depression treatment. Interestingly, only 17% of participants who reported high depressive symptoms re-

ported currently taking any type of antidepressant medication prescribed by their physician.

Logistic regression analyses were conducted to assess differences in depression treatment experience across ethnic groups. Ethnic differences in treatment utilization were examined using logistic regression analyses in those respondents with high depression scores (Table 3). African Americans were less likely to report any history of treatment for depression, including treatment involving antidepressant medications or mental health professionals compared with the white reference group. Conversely, individuals classified in the "other" ethnic group were more likely to report treatment from a mental health professional than the white reference group. No significant differences were observed in treatment use between the white and Latino groups. In addition, no differences were observed by ethnic group in the use of herbal remedies or alternative healers for those with current depression.

Satisfaction with depression treatment

Satisfaction with each form of depression treatment (i.e., antidepressant medication, use of mental health providers, herbal remedies, and alternative healers) was assessed in those patients reporting high depression scores ($n = 56$). Sixty-three percent of those using antidepressant medication reported feeling "satisfied" or "very satisfied" with their experience. Fifty-nine percent of those who used a

Table 3—Ethnic differences in depression treatment for patients with high depressive symptoms (n = 56)

Treatment modality*	Whites	African Americans	Latinos/Hispanics	Others
Any treatment	1.0	0.08 (0.01–0.69)†	0.29 (0.001–66.54)	7.81 (0.50–121.58)
Antidepressant medication	1.0	0.13 (0.02–0.80)†	0.56 (0.01–47.77)	8.64 (0.75–99.68)
Mental health provider	1.0	0.01 (0.001–0.24)†	0.004 (0.00–1.02)	21.56 (1.08–429.03)†
Herbal remedies	1.0	0.88 (0.09–8.22)	—	2.02 (0.11–36.37)
Alternative healers	1.0	5.34 (0.36–78.56)	1.09 (0.01–222.72)	8.06 (0.26–255.00)

Data are odds ratio (95% CI). *Logistic regression models controlling for site, sex, and health insurance status in all models. Whites were used as the reference group using effects coding. †P < 0.05.

mental health provider reported satisfaction with their treatment. Of those using alternative healers, 80% reported satisfaction, while 38% of those using herbal remedies reported satisfaction with their treatment.

Differences in treatment satisfaction by ethnic group membership were examined using logistic regression analyses. No differences between ethnic groups in satisfaction with various forms of depression treatment (e.g., antidepressant medication, mental health providers, herbal remedies, and alternative healers) were observed.

CONCLUSIONS — In this study, rates of depressive symptoms, depression treatment, and satisfaction with treatment were evaluated in a multiculturally diverse community sample. The findings from this study contribute to the literature in documenting rates of depression in people of color with diabetes as well as providing data on the acceptability of depression treatment among individuals with type 1 and type 2 diabetes. Using a conservative threshold for the classification of self-reported depressive symptoms, observed rates of high depression (25%) were comparable to previously published studies (i.e., 25–30%) (1,3–6). Examination of depression rates across ethnic groups indicated that there were no significant differences in rates of high depression using a self-report questionnaire. The rates of depression reported in this study are consistent with those of previously published studies (3–6). Further research is needed to examine these trends at the national level. The data in the current study provided an opportunity to compare rates in different ethnic groups within the same study sample.

Examination of depression treatment use indicated that the majority of participants who reported high levels of depressive symptoms reported some form of depression treatment (76%) in their lifetime. Remarkably, only 17% of partici-

pants who reported high depression levels reported a current antidepressant prescription from their provider. Antidepressant medication and treatment from mental health providers were most prevalent. Reported rates of the use of herbal remedies (9%) to treat depression in this sample were comparable to those found among primary care patients (11%; [30]).

Examination of ethnic group differences in the use of treatment indicated that African Americans were less likely to report antidepressant medication treatment compared with whites. African Americans were also less likely to report the use of mental health services compared with all other ethnic groups. No ethnic differences were observed in the use of herbal remedies or alternative healers. Previous qualitative studies of depression attitudes among African-American primary care and diabetic patients have shown a preference for spiritual healers in the treatment of depression compared with whites (31,32). We did not observe this trend. This may be due to the relatively small numbers of participants in our study who reported the use of alternative treatment strategies, thereby limiting statistical power to detect group differences.

The findings of ethnic differences in mental health treatment use in this sample of diabetic participants mirrored national trends (33,34). Trends in depression treatment among African Americans in this sample may be partly attributable to cultural attitudes toward depression and its treatment (31,32). In focus groups conducted with white and African-American depressed primary care patients, Cooper et al. (31) noted that African-American participants were more likely to discuss spirituality and community stigma associated with depression treatment compared with their white counterparts. In a qualitative study of depression treatment attitudes among African Americans with type 2 diabetes, Egede (32) found that participants reported misconceptions about the etiology and vulnerability to depression (e.g., phys-

ical or emotional weakness), perceived depression as a severe illness, identified depression treatment as beneficial, and identified community stigma and provider trust as a significant barrier to seeking treatment. These themes, taken together with the findings from the current study, suggest the need for additional patient-provider dialogue about the etiology, efficacy, and treatment modalities for depression for culturally diverse diabetic patients.

Examination of participant attitudes toward depression treatment indicated general satisfaction with antidepressant medication, mental health services, and treatment from alternative healers. Low levels of satisfaction (37%) were observed in those with high levels of depressive symptoms who used herbal remedies, possibly indicating a mismatch between participant expectations of treatment effectiveness and depression outcomes.

Limitations to the generalizability of study findings include the use of a convenience sample and self-report questionnaires. The study recruited a convenience sample from two diabetes expos in the northeastern U.S. Participants may have had greater health awareness and access to health care compared with the general diabetic population. Indeed, 92% of participants reported health insurance coverage. Reported rates of depression treatment observed in this sample may be higher compared with the general diabetic population.

The use of self-report questionnaires may also limit generalizability of the findings. Previous work comparing rates of depression in diabetes samples by assessment methodology (self-report questionnaires compared with psychiatric interviews) has found higher rates of depression in those studies using self-report data (1). With these considerations in mind, conservative thresholds (CESD score ≥22) were used in the dichotomous coding of depression status to adjust for systematic error associated with self-report methodology as well as any infla-

tion that might occur in symptom reporting due to somatic symptoms from diabetes unrelated to mood. Comparable rates of depressive symptoms to previous studies were observed lending credence to the validity of these findings.

Finally, the relatively small sample size of patients with high levels of depressive symptoms may limit the generalizability of ethnic differences in patient treatment experiences and satisfaction with treatment. Similarly, small sample sizes among some ethnic groups (i.e., Latino and other) may limit our ability to detect meaningful differences in depression treatment or satisfaction.

The findings from the current study contribute to the growing evidence of the presence of significant rates of depression in multiculturally diverse samples. Such rates give cause for concern in light of the significant impact that comorbid depression has been shown to have on glycemic control and diabetes complications (7,11–13). Longitudinal studies are needed to evaluate the effectiveness of depression treatment in community samples. Early detection and treatment intervention provide the best protective mechanisms available against the effects of depression on diabetes outcomes. Findings from this study point to the acceptability of depression treatment in patients with type 1 and type 2 diabetes.

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