

Improving Treatment of Depression Among Latinos With Diabetes Using Project Dulce and IMPACT

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OBJECTIVE — To assess the feasibility and cost of integrating diabetes and depression care management in three community clinics serving a low-income and predominately Spanish-speaking Latino population.

RESEARCH DESIGN AND METHODS — We screened diabetes patients for depression, and for those with depressive symptoms, we provided depression care management. We assessed changes in depressive symptoms using the Patient Health Questionnaire-9 (PHQ-9), diabetes self-care activities (nutrition, exercise, and medication adherence), and costs.

RESULTS — Thirty-three percent of patients with diabetes had symptoms of major depression. Among 99 patients completing the study, PHQ-9 scores declined by an average of 7.5 points from 14.8 to 7.3 ($P < 0.001$). Clients averaged 6.7 visits with the care manager during the study period. Costs of depression care management were estimated to be \$512 per participant.

CONCLUSIONS — Adding a depression care manager to an existing diabetes management team was effective at reducing depressive symptoms at a reasonable cost.

Diabetes Care 31:1324–1326, 2008

Depression is a common and costly comorbidity among people with diabetes (1). Depression is believed to negatively affect self-management of diabetes through its adverse effects on energy, motivation, concentration, self-efficacy, and interpersonal interactions (2). Depression is also associated with an impaired ability to follow physician recommendations for lifestyle changes including dietary restrictions, increased exercise, and smoking cessation (2,3). Depression in patients with diabetes is associated with more lapses in refilling oral hypoglycemic, lipid-lowering, and anti-hypertensive prescriptions and more missed medical appointments (3). Interventions that increase exercise and improve glycemic control may also decrease depressive symptoms in patients with diabetes, pointing to potential positive rein-

forcing effects of integrating depression care with diabetes management (4,5).

We developed a model of colocated, comanaged diabetes and depression care by combining two established, evidence-based care management programs: Project Dulce for diabetes and Improving Mood-Promoting Access to Collaborative Treatment (IMPACT) for depression. Project Dulce has been shown to improve diabetes outcomes among low-income, predominately Spanish-speaking Latinos with diabetes in San Diego County (6). Similarly, the IMPACT model has been shown to improve depression outcomes (7,8). Our goals were to assess the feasibility of a combined program in a low-income setting, to demonstrate reductions in depressive symptoms, and to estimate costs of the intervention in a pilot study in three community clinics.

RESEARCH DESIGN AND

METHODS — We developed a combined diabetes and depression management program by adding a depression care manager to an existing diabetes management team. Project Dulce is a culturally competent diabetes case management program that includes peer-led self-management training. We felt that IMPACT could be its sister in depression care management because of its focus on screening, measurement, and personalized, evidence-based guideline care. Consistent with the philosophy of Project Dulce, the depression care manager was bilingual and bicultural and aware of the cultural issues involved in providing treatment for depression to a primarily Spanish-speaking Latino population. The IMPACT model was made more flexible with regard to responding to cultural norms and beliefs, low literacy, socioeconomic barriers, and social stigma.

Project Dulce participants were screened for depression using the PHQ-9. Those identified with clinically significant depressive symptoms (defined as a PHQ-9 score ≥ 10) had a visit scheduled with the depression care manager, who conducted a psychosocial history, reviewed educational materials, and discussed patient preferences for depression treatment with antidepressant medications and/or structured psychotherapy using Problem-Solving Treatment in Primary Care. All patients received education about depression and behavioral activation. As appropriate, the depression care manager consulted with the diabetes case manager and the patient's primary care physician. New patients and patients needing treatment plan adjustments were discussed in weekly caseload review meetings with a consulting psychiatrist.

We measured depressive symptoms using the PHQ-9 at baseline and at a 6-month follow-up. We calculated Cohen's *d* statistics from self-reported diabetes self-care activities related to nutrition, exercise, and glucose monitoring/medication adherence (a summary of the diabetes self-care activities form, in Spanish and in English, is available in an online appendix at <http://dx.doi.org/10.2337/>

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Received 11 February 2008 and accepted 18 March 2008.

Published ahead of print at <http://care.diabetesjournals.org> on 20 March 2008. DOI: 10.2337/dc08-0307.

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dc08-0307). Differences in these outcomes were assessed using Student's *t* test. Detailed records of treatment allowed us to estimate the costs of the intervention.

RESULTS— We screened 499 participants in Project Dulce for depression using the PHQ-9: 464 (93%) were eligible to participate in Project Dulce plus IMPACT; 154 (33%) scored as having clinically significant depression, and 99 (64%) completed the study. Among those completing the study, mean \pm SD age was 53 ± 9 years; 84% of subjects were female and 74% were Latino, and 71% noted Spanish as their primary language. Only one demographic characteristic was related to study participation: among those eligible to participate in the study, women were more likely to be identified as having symptoms of major depression than men (odds ratio 1.9; $P < 0.001$).

Clients averaged 6.7 visits with the depression care manager during the study period (one initial visit and 5.7 follow-up visits) with 31.5 ± 26.6 days as the average time between visits. Sixty-nine percent received problem-solving treatment, and 35% received medication management. PHQ-9 scores declined by an average of 7.5 points throughout the study period, from 14.8 to 7.3 (SD 6.5, SEM 0.66; $P < 0.001$; Fig. 1). Diabetes self-care activities related to nutrition increased (Cohen's $d = 0.26$; $P = 0.0187$).

The depression case manager spent ~ 20 h per week in direct patient care (face-to-face meetings) and another 10 h per week on care coordination, scheduling, and administration. Each participant required, on average, a 30-min consultation with the diabetes nurse case manager, 10 min with a consulting physician, and 20 min with the consulting psychiatrist. Using current wages, benefits, and rates for administration/overhead, we estimate that depression care management cost \$512 per participant completing the study.

CONCLUSIONS— The combined diabetes and depression care management program tested in this pilot study was both feasible and highly effective in reducing depressive symptoms in a low-income, predominantly Spanish-speaking Latino population. Because of the high rate of comorbid diabetes and depression in Latinos, a combined program may be more attractive to primary

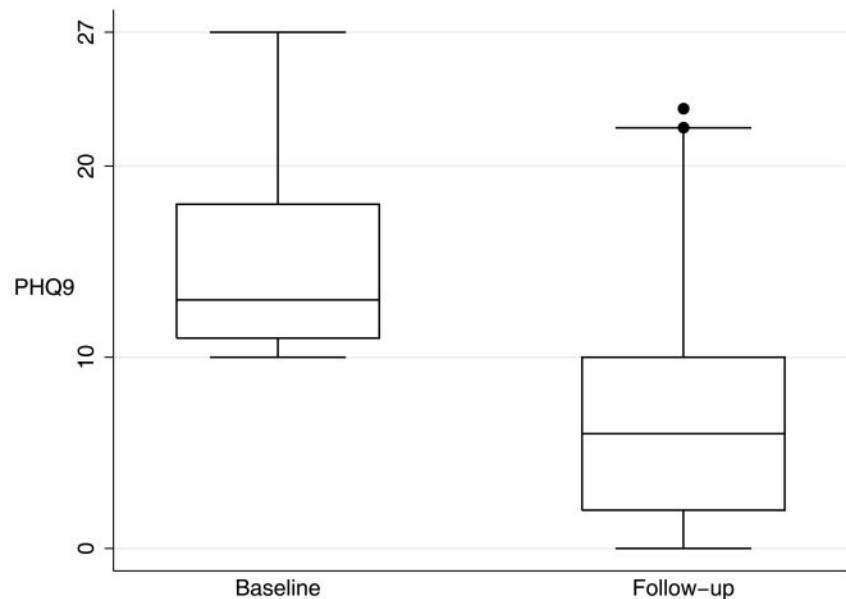


Figure 1—Box plot showing depressive symptoms at baseline and 6-month follow-up: median, horizontal line through box; inter-quartile range, box; highest and lowest PHQ-9 scores, whiskers; and outlier PHQ-9 scores, dots.

care clinics than a freestanding depression care program like IMPACT.

Our pilot study is limited by the lack of a randomly assigned control group and a relatively small sample size. This limits its statistical power to examine smaller but clinically important effects on health behaviors but provides strong support for further research on this combined intervention approach.

Although the IMPACT model has previously been shown to be effective in older populations with diabetes (8), this is the first study to examine a fully integrated program. It is also the first study of IMPACT depression care management in a population of largely Spanish-speaking Latinos. The cost of providing depression care management in this setting is modest and consistent with earlier cost estimates for the IMPACT program (7). Recent data from IMPACT (8) suggest that better depression care may be associated with lower total health care costs than associated with care as usual.

Acknowledgments— Financial support was provided by the California Endowment and the Center for Health Care Strategies Medicaid Value Program.

We acknowledge David P. Folsom, MD, MPH, and Rita M. Haverkamp, RN, MSN, CNS, for assistance with program development and Holly Teetzel for research support.

References

1. Gilmer TP, O'Connor PJ, Rush WA, Crain AL, Whitebird RR, Hanson AM, Solberg LI: Predictors of health care costs in adults with diabetes. *Diabetes Care* 28:59–64, 2005
2. Katon W, Von Korff M, Lin E, Simon G, Ludman E, Bush T, Walker E, Ciechanowski P, Rutter C: Improving primary care treatment of depression among patients with diabetes mellitus: the design of the pathways study. *Gen Hosp Psychiatry* 25:158–168, 2003
3. Lin EH, Katon W, Von Korff M, Rutter C, Simon GE, Oliver M, Ciechanowski P, Ludman EJ, Bush T, Young B: Relationship of depression and diabetes self-care, medication adherence, and preventive care. *Diabetes Care* 27:2154–2160, 2004
4. Blumenthal JA, Babyak MA, Moore KA, Craighead WE, Herman S, Khatri P, Waugh R, Napolitano MA, Forman LM, Appelbaum M, Doraiswamy PM, Krishnan KR: Effects of exercise training on older patients with major depression. *Arch Intern Med* 159:2349–2356, 1999
5. Testa MA, Simonson DC, Turner RR: Valuing quality of life and improvements in glycemic control in people with type 2 diabetes. *Diabetes Care* 21 (Suppl. 3): C44–C52, 1998
6. Gilmer TP, Roze S, Valentine WJ, Emy-Albrecht K, Ray JA, Cobden D, Nicklasson L, Philis-Tsimikas A, Palmer AJ: Cost-effectiveness of diabetes case management for low-income populations. *Health Serv Res* 42:1943–1959, 2007

7. Unutzer J, Katon W, Callahan CM, Williams JW Jr, Hunkeler E, Harpole L, Hoffing M, Della Penna RD, Noël PH, Lin EH, Areán PA, Hegel MT, Tang L, Belin TR, Oishi S, Langston C, IMPACT Investigators: Collaborative care management of late-life depression in the primary care setting: a randomized controlled trial. *JAMA* 288:2836–2845, 2002
8. Katon W, Unutzer J, Fan MY, Williams JW Jr, Schoenbaum M, Lin EH, Hunkeler EM: Cost-effectiveness and net benefit of enhanced treatment of depression for older adults with diabetes and depression. *Diabetes Care* 29:265–270, 2006