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ORIGINAL PAPER

Promotoras as Mental Health Practitioners in Primary Care: A Multi-Method Study of an Intervention to Address Contextual Sources of Depression

Howard Waitzkin · Christina Getrich · Shirley Heying · Laura Rodríguez · Anita Parmar · Cathleen Willging · Joel Yager · Richard Santos

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Abstract We assessed the role of *promotoras*—briefly trained community health workers—in depression care at community health centers. The intervention focused on four contextual sources of depression in underserved, low-income communities: underemployment, inadequate housing, food insecurity, and violence. A multi-method design included quantitative and ethnographic techniques to study predictors of depression and the intervention's impact. After a structured training program, primary care practitioners (PCPs) and *promotoras* collaboratively followed a clinical algorithm in which PCPs prescribed medications and/or arranged consultations by mental health professionals and *promotoras* addressed the contextual sources of depression. Based on an intake interview with 464 randomly recruited patients, 120 patients with depression were randomized to enhanced care plus the *promotora* contextual intervention, or to enhanced care alone. All four contextual problems emerged as strong predictors of depression (chi square, $p < .05$); logistic regression revealed housing and food insecurity as the most important predictors (odds ratios both 2.40, $p < .05$). Unexpected challenges arose in the intervention's implementation, involving infrastructure at the health centers, boundaries of the *promotoras'* roles, and "turf" issues with medical assistants. In the quantitative assessment, the intervention did not lead to statistically significant improvements in depression (odds ratio 4.33, confidence interval overlapping 1). Ethnographic research demonstrated a predominantly positive response to the intervention among stakeholders, including patients, *promotoras*, PCPs, non-professional staff workers, administrators, and community advisory board members. Due to continuing unmet mental health needs, we favor further assessment of innovative roles for community health workers.

Keywords Mental health · Health services accessibility · Primary health care · Community health aides · Community health centers

H. Waitzkin (✉)
University of New Mexico, Albuquerque, NM 87131, USA
e-mail: waitzkin@unm.edu

C. Getrich
Department of Family and Community Medicine,
University of New Mexico, Albuquerque, NM, USA

C. Getrich · S. Heying · C. Willging
Department of Anthropology, University of New Mexico,
Albuquerque, NM, USA

L. Rodríguez
The Community Coalition for Healthcare Access,
Albuquerque, NM, USA

A. Parmar
The Robert Wood Johnson Foundation Center for Health Policy,
University of New Mexico, Albuquerque, NM, USA

C. Willging
The Behavioral Health Research Center of the Southwest,
Albuquerque, NM, USA

J. Yager
Department of Psychiatry, University of Colorado,
Denver, CO, USA

R. Santos
Department of Economics, University of New Mexico,
Albuquerque, NM, USA

Introduction

Substantial barriers to adequate services affect people with mental health problems [1]. When people seek mental

health services, they tend to do so in the primary care sector [2, 3]. However, primary care practitioners (PCPs) often do not recognize mental health disorders, do not provide adequate treatment, and report difficulties in responding to patients' psychosocial needs [1, 4–6].

We report here the results of an intervention in which *promotoras* (community health workers) assisted in the identification and treatment of depression within community health centers (CHCs). Our aims were: (1) to educate *promotoras* about depression; (2) to implement and evaluate a procedure for *promotoras* to identify depression among patients who sought primary care services; (3) to implement and evaluate a procedure by which patients identified with depression received treatment through the collaboration of *promotoras* and PCPs; and (4) to assess the value achieved by this intervention, as determined by outcome measures and as perceived by key stakeholders. The main research question, focusing on the fourth aim, asked: To what extent can an intervention that uses *promotoras* to address social contextual sources of depression achieve improved outcomes in patients and acceptance by stakeholders?

Our project focused specifically on efforts by *promotoras* to address four sources of depression in patients' social context: underemployment, inadequate housing, food insecurity, and violence. We used a multi-method research design, with quantitative methods to determine the predictors of depression and the impact of the intervention on outcomes, and ethnographic methods to assess the intervention's implementation and impact as perceived by key stakeholders. To our knowledge, our project was the first multi-method evaluation of *promotoras* focusing on depression among patients in primary care.

Diagnosing and Improving Services for Depression in Primary Care

Screening for Mental Disorders and Intervention Trials

When patients who present to primary care settings receive screening, the prevalence of depression generally ranges from 20 to 50%. These prevalence rates vary considerably according to setting, method of assessment, language used, and race/ethnicity [7–12].

Intervention trials for psychiatric disorders in large primary care settings such as managed care organizations [13–18] have included improved depression treatment by systems modification or quality improvement programs to foster evidence-based care [19–23]. In the Partners in Care study, guideline-informed interventions resulted in improved quality of care, quality of life, clinical outcomes, and employment retention; cost effectiveness analysis also showed substantial benefits [24–26]. Enhanced depression care for minorities has led to long-term improvements in outcomes [27]. Most intervention strategies include guideline-informed "best practices" for recognition and treatment of depression [28–32]. Recent intervention research demonstrates the value of enhanced, collaborative approaches [33–41]. Several studies substantiate the efficacy of collaborative interventions for depression in primary care for ethnically diverse and underserved populations [42–48]. Nevertheless, disparities remain in the care of patients treated in primary care settings, especially for minorities [49].

Promotoras *and the Challenges of Underserved Areas*

Promotoras have become a widely adopted work role in underserved communities [50, 51]. Our definition of *promotora* refers to her or his role as a trusted community member, who provides health-related services for underserved individuals in community settings and helps fortify the relationship between patients and PCPs [52–55]. Community health workers are known by nearly 30 titles such as: *promotoras de salud* (Spanish for "health promoters"), community health advocates, outreach workers, indigenous health workers, lay health educators, and community health aides [56, 57].

Other than mental health services, *promotoras* have performed a variety of duties: first aid, nutrition education, blood pressure screenings, midwifery, translation, environmental work, patient transportation, case management, breast cancer screening, diabetes education, asthma management, social work, and peer counseling [58–61]. The Diabetes Initiative of the Robert Wood Johnson Foundation has included *promotoras* focusing in part on depression [62, 63]. *Promotoras* may help PCPs *to* identify patients' health needs and to consider the cultural relevance of treatments provided [64].

Researchers have assessed the efficacy of *promotora* interventions focusing on heart disease [65], diabetes [66], tobacco [67], general chronic diseases [68], breast and cervical cancer [69, 70], and nutrition [71]. These studies generally showed favorable intervention effects. Regarding applicability to diverse cultures and ethnicities, studies in Panama [72], Uganda [73], and Chile [74] showed positive results from training non-physicians for depression interventions in rural settings. A curriculum "toolbox" was developed for *promotoras* to use for English and Spanish-speaking diabetic patients with depression [75].

Public Health, Risk Factors for Mental Disorders, and Contextual Conditions

Efforts by NIMH, the Surgeon General, the World Health Organization, the President's New Freedom Commission on Mental Health, and the Institute of Medicine have

emphasized interventions to impact risk factors for mental illness [76–79]. Social risk factors for depression include domestic violence, traumatic life events, marital discord, unmarried status, job stress, underemployment, poverty, and social isolation [80–84]. We documented the relationship of contextual problems, such as violence, to depression and other mental disorders among Latino and American Indian patients seen in primary care settings [85–87]. Long-term outcomes may improve through reducing social risk factors for stressful life events [88]. The "behavioral model for vulnerable populations" also has addressed some of these contextual influences on health outcomes, for example regarding issues of violence as well as financial, nutritional, and housing insecurity among homeless women [89–91].

Conceptual Framework, Objectives, and Significance

In recent research, social contextual conditions such as underemployment [92–97], inadequate housing [98–101], and food insecurity [102–109] figure as important risk factors in depression. Depression-causing violence, another risk factor, can arise in the family, between intimate partners, in child abuse, and or in the community [110–119].

Remarkably little research has examined the impact of interventions designed to modify such contextual difficulties, especially in primary care. In non-medical settings, experimental or quasi-experimental research has shown that contextual interventions directed toward underemployment [120–122], inadequate housing [123–126], domestic violence [127], and poverty [128] exerted favorable effects on mental health outcomes. From an extensive review, however, we located only one intervention trial that specifically addressed contextual problems in primary care. For a randomized urban trial, Miranda et al. compared group cognitive behavioral therapy (CBT) alone, versus CBT plus clinical care management. In the CBT plus clinical care management group, social work care managers addressed problems in housing, employment, recreation, and interpersonal relationships, which resulted in better mental health outcomes [129].

Figure 1 shows our conceptual framework. Adopting Engel's "biopsychosocial" approach [130, 131], we considered the importance of biological and psychological conditions in the etiology and treatment of depression. However, we also emphasized social conditions as causative elements in depression, recognizing that contextual conditions not only can affect depression but that depression can contribute to worsening social conditions, especially in such arenas as unemployment, housing insecurity, food insecurity, and violence. For that reason, we depicted the relationships between depression and contextual conditions as bidirectional.

Methods

Research Setting

At the time of the study, New Mexico ranked 47th among the 50 states in personal income per capita ($24,291) [132], 3rd in persons below the poverty level (18.4%) [133], 2nd in lack of health insurance (22.1%) [134], and 1st to 11th in underemployment, reflecting the economy's volatility [135, 136]. Latinos and American Indians made up 51.6% of the state's population [136]. The state's drug- and alcohol-induced death rates per population ranked 1st and 2nd highest respectively, the suicide death rate 5th highest, and the homicide death rate 6th highest in the United States [137].

Recruitment of *Promotoras* and Educational Approach

We initially hired two applicants: a receptionist at a CHC and a security guard. Both *promotoras*, bilingual in English and Spanish, were high school graduates with roots in the community. When 1 of the original *promotoras* left because of major health and financial problems, we recruited another *promotora*.

Five training sessions took place at each of the two participating CHCs. A prior mentorship program served as a model for the educational program [138]. Conferences for *promotoras,* PCPs, and other staff members took place over the lunch hour at the CHCs. *Promotoras* also took part in an educational program on depression for community health workers.

Assessment Instruments

Demographic Data

An initial instrument assessed age, gender, income, employment status, socioeconomic status, marital status and children, immigration status, and number of years in the United States.

Mental Health Disorders

We used the extensively validated Patient Health Questionnaire (PHQ), whose 16 questions identified threshold DSM-IV diagnoses of major depressive disorder, panic disorder, other anxiety disorder, and bulimia nervosa, and subthreshold diagnoses (encompassing fewer symptoms than required for specific DSM-IV disorders) of other depressive disorder, probable alcohol abuse or dependence, somatoform disorder, and binge eating disorder [139–147]. We added a section assessing drug abuse or dependence, patterned on the PHQ alcohol section [148]. For Spanish-

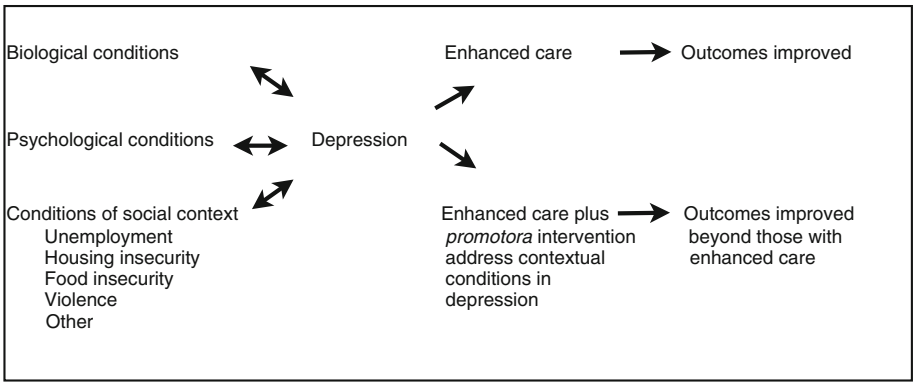

Fig. 1 Conceptual framework for the proposed research

speaking patients, we used the Spanish version of the PHQ, previously validated in primary care settings [149, 150].

Contextual Risk Factors

Additional instruments elicited information about marital or partnership change, geographical relocation, job loss, job change, housing problems, and food insecurity. We used the Trauma Screening Questionnaire and StaT instruments to measure trauma exposure and intimate partner violence [151, 152].

Pre-Test

We pre-tested the PHQ instrument with 150 patients and then made limited modifications so the intake interview took less than 1 h. No modifications in the Spanish PHQ proved necessary for the local setting.

Promotora-PCP Consultation

Before patients entered the study, we provided the PCPs with clinical guidelines on "best practice" diagnosis and treatment of depression [153]. The medications and frequency of recommended follow-up in the guidelines were modified slightly, based on medications available in the CHCs' formulary and practitioners' schedules. For each patient recruited, the PCP received the PHQ results from the *promotora*. The PCP did not receive reminders or inducements, with a rationale of restricting the experimental variable to the *promotora*-based algorithm described below.

Subjects, Sample Size

Recruitment

The *promotoras* recruited patients from the list of scheduled patients for each day, using a table of random numbers to determine which patients to approach for participation in the study. We randomized recruitment activities at the CHCs by day of the week and by morning versus afternoon sessions. To ensure adequate follow-up, patients were informed at intake that they would be invited to participate in one or more follow-up interviews. Re-contact information was collected on all participants, including the names, addresses, and phone numbers of at least two other relatives or close friends who would know the subjects' whereabouts.

Inclusion and Exclusion Criteria

Patients were included if they met the criteria for a diagnosis of depression on the PHQ. The exclusion criteria were: (a) suicidal or homicidal ideation (emergency care was provided to such patients); (b) acute bereavement; (c) psychotic or bipolar depression; (d) age under 18; and (e) general health status precluding the interview.

Sample Size Determination, Statistical Power

In determining sample size, we made the following assumptions. The significance level was set at 0.05 and the desired statistical power at 0.80. Based on prior interventions, we anticipated medium effect size (0.3) for the intervention. We assumed conservatively a 10% prevalence of depression. With an anticipated attrition rate of 15%, a sample size of 1,040 respondents would detect all relevant effects of the intervention [154–156]. Because the prevalence of depression observed in the study itself was higher, 28%, we were able to reduce the total number of enrolled subjects from 1,040 to 464. From the intake, we recruited 120 patients with depression.

Intervention

Intervention Algorithm

We developed an algorithm that the *promotoras* and PCPs applied collaboratively (Fig. 2). If the PHQ indicated a depression diagnosis, the *promotoras* provided this information to the PCP, who initiated treatment with medication

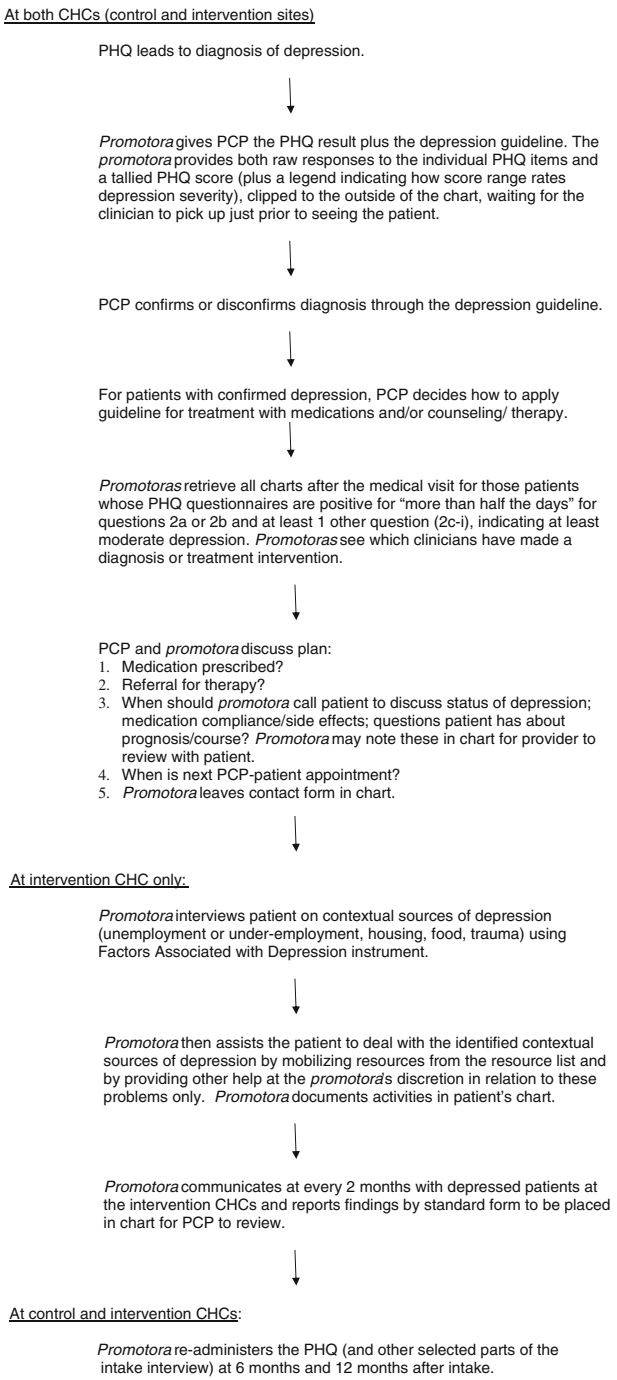

Fig. 2 Primary care practitioner–*promotora* algorithm

and/or arranged psychiatric or psychological consultation as warranted. The *promotoras* tried to address problems in four contextual areas: underemployment, inadequate housing, food insecurity, and violence. PCPs and *promotoras* communicated orally at least monthly. The algorithm also included follow-up PHQ assessments at 6 months and 12 months after diagnosis to determine changes in depression.

When the intake process revealed a contextual problem, the *promotoras* offered to seek a resolution. *Promotoras* used a resource directory that the CHC system had developed previously and which the research team updated and expanded. For instance, if a depressed patient reported a problem of unemployment or unstable employment, the *promotora* contacted one or more community based organizations that dealt with vocational training, rehabilitation, tracking jobs, advising about job interviews, and similar employment-related services. If a patient reported a problem of insecure housing or homelessness, the *promotora* helped contact organizations that focused on housing. For problems of food insecurity, the *promotora* facilitated contacts with churches, food banks, and government agencies that provided food stamps or helped clients obtain suitable foods. If a patient suffered from violence, the *promotora* helped seek assistance from shelters, programs focusing on abuse, etc. The *promotora* tracked the referral through monthly follow-up telephone calls with the patient and the organizations.

Promotora *Intervention Contact Form*

After each encounter with a patient, the *promotoras* wrote case notes and completed a form that specified the referrals and other actions taken to address contextual sources of depression that the patient reported.

Intervention Implementation

As in prior intervention trials such as the Partners in Care study, we randomized CHCs rather than patients within CHCs. We chose this approach to avoid the well documented problem of "contamination," which refers to an intervention's impact on control subjects at a clinical site [23–27].

Therefore, the algorithm was implemented at one "experimental" CHC in the network. At a "control" CHC, depression also was assessed by the PHQ and the findings were provided to PCPs, but the *promotora* algorithm was not implemented. At both CHCs, depression care was enhanced through the education program described above. We determined which CHC received the *promotora* algorithm by a three out of five heads or tails coin flip. If the *promotora* intervention achieved positive outcomes at the experimental CHC, the design called for its later implementation at the control CHC (Table 1).

Quantitative Data Analysis

Predictors of Depression

We first examined the univariate distributions of depression and other mental health disorders, risk factors, and

Table 1 Research design for the *promotora* intervention

	Intake interview by *promotoras*	PCP Dx & Rx	*Promotora* algorithm (employment, housing, food, violence)	6-month assessment	12-month assessment	*Promotora* algorithm (housing, food, employment, violence)
Experimental CHC	X	X	X	X	X	
Control CHC	X	X		X	X	(X)

PCP primary care practitioner, *Dx* diagnosis, *Rx* treatment

contextual problems. Depression was treated as a dichotomous dependent variable (present or absent), based on the standard PHQ scoring scheme. Independent variables included risk factors and contextual problems. Demographic characteristics and CHC site were intervening variables. Missing values for independent variables were imputed via a multiple imputation routine [157]. Multiple logistic regression determined the degree to which the independent variables predicted depression, controlling for intervening variables. We calculated odds ratios and 95% confidence intervals. Although not a standard use of the PHQ, we created a variable to indicate severity of depression by counting depressive symptoms and performed multiple regression analysis on this variable as well.

Quantitative Assessment of the Intervention's Impact

The unit of analysis was the individual patient. A two by two chi-square analysis assessed the effectiveness of the intervention for depression. Differences in other measures between the experimental and control CHCs were assessed with chi-square analyses (for nominal data) or multivariate analysis of variance (for interval data). We also assessed outcomes for patients served by each *promotora* through chi-square analyses. To determine the statistical significance of findings, we used two-tailed tests and a significance level of 0.05.

Multivariate logistic regression models determined the relative importance of the intervention versus other key variables in predicting change in depression and other outcome indicators. Independent variables significantly associated with depression in the univariate and bivariate analyses were selected for the multivariate regression modeling procedures. For this analysis, improvement in depression was operationally defined as a transition from presence to absence, as assessed by the PHQ instrument.

To address non-independence of repeated observations for the same subjects, we used random effects in subjects and fixed effects in time [157]. Data were analyzed with SAS software (Cary, NC).

Ethnographic Assessment

Participant Observation

Four ethnographers completed more than 200 h of participant observation at the two CHC sites. The ethnographers "shadowed" the *promotoras* as they went about their workdays. We randomized observation periods by ethnographer, *promotora* observed, CHC site, day of the week, and time of day (morning or afternoon shift).

Semi-Structured Interviews

Interviews with stakeholders (patients, PCPs, and *promotoras*) permitted assessment of intervention implementation, barriers and facilitators that affected fidelity to the algorithm, and perceived value of the intervention. Interview guides followed a standardized structure, tailored to capture the experiences of each respondent group. The ethnographers interviewed the *promotoras* and a random selection of PCPs, patients, non-professional staff members, CHC administrators, and community board members. In all, the ethnographers conducted 35 semi-structured interviews.

Ethnographic Data Analysis

The ethnographers took extensive field notes and transcribed all interviews, inputting both sets of documents into NVivo [158], a software package for iterative coding and data analysis. They also reviewed the *promotora* intervention contact forms. Qualitative analysis identified common themes across and within respondent groups. Data were analyzed through iterative codings: "open coding" to uncover general themes, ideas, and issues; and "focused coding" to determine which of the themes, ideas, and issues were repeated often and which represented unusual or particular concerns [159].

To triangulate the data analysis, the ethnographers checked the consistency of information collected at different times and through different methods. This work compared observational data with medical chart data and

interview data, checked for consistency in what respondents said about the intervention over time, and compared perspectives of the stakeholder groups [160].

Results

Identification, Correlates, and Predictors of Depression

Table 2A presents the prevalences of depression and other mental health disorders at baseline. The PHQ instrument revealed depression in 28% of the patients screened. Somatoform disorders and anxiety disorders (including panic disorder) also occurred frequently, 16 and 17% respectively.

We used chi-square tests to examine associations between depression and demographic characteristics, contextual risk factors, and traumatic life events (Table 2B–D). A higher proportion of non-US citizens was depressed, compared to US citizens (35 vs. 26%). Subjects who experienced a recent move, job change, or job loss were much more likely to manifest depression. A much higher proportion of subjects who reported difficulties paying for housing or food was depressed. Depression was significantly more prevalent among subjects who had experienced traumatic life events, including general violence, intimate partner violence or threat, adult sexual violence, or childhood sexual violence.

With multiple logistic regression analysis, we examined the relative importance of demographic characteristics, contextual risk factors, and traumatic life events in predicting depression (Table 2E). From this analysis, significant predictors of depression included inadequate housing and food insecurity.

Implementation and Impact of the Intervention

Quantitative Assessment of Outcomes

Subjects in the experimental and control groups did not differ significantly by gender, marital status, marital status, employment, housing problems, food problems, or violence; subjects at the experimental site were slightly older and at the control site slightly more Hispanic in ethnicity (data not shown).

Chi-square analyses did not show a significant effect of the intervention on depression between baseline and 6 months, between baseline and 12 months, or between 6 and 12 months. In the multiple logistic regression analysis, which took into account the pertinent demographic and contextual variables, the intervention effect also did not reach significance in (Table 3). Multiple regression analysis using the measure of depression severity based on symptom count led to substantially similar results (data not shown).

We analyzed changes in the key contextual areas that the *promotoras* were to address in the intervention. At 12 months, the proportion of subjects with difficulty paying for housing decreased from 44 to 28% in the intervention group, and from 41 to 35% in the control group—not a significant difference by Chi square. The proportion of unemployed remain about the same in the intervention group (47 vs. 45%) but deteriorated in the control group (49 vs. 56%), again not a significant difference.

No significant differences in the intervention's impact emerged when analyzed by *promotora*.

Ethnographic Assessment of Intervention Implementation and Outcomes

The ethnographic assessment revealed certain issues regarding fidelity of the implementation process [161]. First, some differences between the clinical sites became apparent. The randomly selected experimental site manifested space constraints, more staff turnover, and lower staff morale—all creating challenges for *promotoras'* work. The control site provided an office for the *promotoras*, maintained more continuity of staffing, and welcomed the *promotoras* more enthusiastically.

Confusion about the boundaries of *promotoras'* role affected the intervention's implementation. *Promotoras* became so closely associated with mental health that they received frequent requests to intervene in crises of patients who were not participating in the intervention. Staff members tried to refer additional patients to the *promotoras,* although the *promotoras* could not accept these referrals because of the random study design. Members of the research team met several times with staff members at both CHCs to clarify the limitations of the *promotoras'* training and responsibilities.

The roles of CHC staff members affected the algorithm's implementation. Medical assistants (MAs) unexpectedly became key players in the intervention. The MAs functioned as gatekeepers because they controlled the *promotoras'* access to medical files, exam rooms, and patients. Low-grade "turf wars" ensued in the initial phases at the experimental CHC site, where some MAs felt threatened by the *promotoras.* Due to this tension, the *promotoras* spent considerable time doing favors for the MAs, such as bringing patients into exam rooms, translating, or retrieving charts.

Regarding the intervention's impact, the ethnographic assessment revealed that key stakeholders perceived the intervention as a useful and cost-effective way to identify and treat depression. *Patients*, selected randomly to participate in the evaluation, conveyed a perception that the

Table 2 Prevalence of mental disorders and predictors of depression

Diagnosis	Present *N* (%)	Absent *N* (%)	Total $N^{\dagger}$
A. Mental disorders			
Major depression	82 (18)	382 (82)	464
Other depression	48 (10)	416 (90)	464
Panic disorder	29 (6)	431 (94)	460
Other anxiety	52 (11)	403 (89)	455
Alcohol disorder	40 (9)	419 (91)	459
Somatoform disorder	74 (16)	390 (84)	464
Bulimia nervosa	4 (1)	453 (99)	457
Binge eating disorder	12 (3)	445 (97)	457
	Depressed *N* (%)	Not depressed *N* (%)	Chi-square (*p* value)
B. Demographic characteristics and depression			
Gender			(0.07)
Male	38 (23)	127 (77)	
Female	92 (31)	207 (69)	
Marital status			(0.25)
Married	53 (25)	156 (75)	
Not-married	77 (30)	178 (70)	
Ethnicity			(0.13)
Hispanic	118 (29)	284 (71)	
Non-Hispanic	12 (20)	48 (80)	
Citizenship			(0.05)
US citizen	79 (26)	226 (74)	
Non-US citizen	49 (35)	92 (65)	
Age			(0.04)
Less than 30 years	30 (29)	74 (71)	
Between 30 and 59 years	85 (31)	187 (69)	
60 years and over	15 (17)	73 (83)	
C. Contextual risk factors and depression			
Marital status change			(0.18)
Present	17 (36)	30 (64)	
Absent	107 (27)	290 (73)	
Move			(0.01)
Present	24 (41)	34 (59)	
Absent	100 (26)	287 (74)	
Job change			(0.02)
Present	39 (37)	66 (63)	
Absent	85 (25)	255 (75)	
Job loss			(0.001)
Present	35 (43)	46 (57)	
Absent	89 (25)	273 (75)	
Housing problem			(<.0001)
Present	52 (56)	41 (44)	
Absent	71 (20)	280 (80)	
Food problem			(<.0001)
Present	44 (61)	28 (39)	
Absent	79 (21)	292 (79)	
Employment			(0.91)
Employed	67 (28)	171 (72)	
Unemployed	62 (28)	162 (72)	

Table 2 continued

	Depressed *N* (%)	Not depressed *N* (%)	Chi-square (*p* value)
D. Traumatic life events and depression			
Major accident or disaster			(0.88)
Present	28 (29)	70 (71)	
Absent	93 (28)	242 (72)	
General violence			(0.002)
Present	29 (43)	38 (57)	
Absent	91 (25)	274 (75)	
Intimate partner violence/threat			(<.0001)
Present	44 (44)	20 (57)	
Absent	76 (23)	255 (77)	
Adult sexual violence			(0.04)
Present	15 (43)	20 (57)	
Absent	105 (27)	289 (73)	
Childhood sexual violence			(0.01)
Present	20 (43)	26 (57)	
Absent	98 (26)	283 (74)	

	B‡	Standard error of B	Odds ratio	Confidence interval††	
				Lower bound	Upper bound
E. Logistic regression analysis for predictors of depression					
Demographic characteristics					
Male	−0.32	0.26	0.73	0.43	1.22
Married[a]	0.00	0.25	1.00	0.61	1.65
Latino[b]	0.64	0.39	1.90	0.88	4.11
US citizen[c]	−0.27	0.27	0.76	0.45	1.29
Age	0.00	0.01	1.00	0.99	1.02
Contextual risk factors					
Marital status change	−0.10	0.43	0.90	0.39	2.11
Move	0.32	0.38	1.37	0.65	2.88
Job change	0.19	0.33	1.20	0.63	2.32
Job loss	0.29	0.36	1.33	0.66	2.72
Housing problem**	0.88	0.33	2.40	1.26	4.58
Food problem*	0.88	0.36	2.40	1.18	4.87
Employed[d]	0.12	0.25	1.12	0.69	1.84
Traumatic life event					
Major accident or disaster	−0.16	0.30	0.85	0.47	1.54
General violence	0.39	0.35	1.48	0.74	2.97
Intimate partner violence/threat	0.60	0.33	1.83	0.97	3.46
Adult sexual violence	−0.22	0.48	0.80	0.31	2.05
Childhood sexual violence	0.55	0.37	1.73	0.84	3.58

* $p < .05$

** $p < .01$

† Missing data are excluded

‡ B is the unstandardized regression coefficient

†† 95% confidence intervals are shown. $N = 464$

[a] Reference category is not married

[b] Reference category is non-Latino

[c] Reference category is non-US citizen

[d] Reference category is unemployed

Table 3 Logistic regression analysis for impact of intervention on depression[†]

	B[‡]	Standard error of B	Odds ratio	Confidence interval[††]	
				Lower bound	Upper bound
Intervention					
Group (Intervention = 1)	1.47	0.92	4.33	0.70	26.66
Time period (12 months = 1)	−0.71	0.70	0.49	0.12	1.94
Interaction: group × period	−1.27	0.92	0.28	0.05	1.73
Demographic characteristics					
Male	0.74	0.88	2.09	0.37	11.82
Married[a]	0.43	0.78	1.53	0.33	7.13
US citizen[b]	−0.36	0.76	0.70	0.16	3.14
Age	0.05	0.03	1.05	0.99	1.11
Contextual risk factors					
Job change	−0.70	0.99	0.50	0.07	3.47
Housing problem	1.21	0.94	3.34	0.52	21.47
Food problem	−0.09	0.96	0.91	0.14	6.08
Employed[c]	−1.21	0.71	0.30	0.07	1.22
Traumatic life event					
Major accident or disaster	−0.29	0.90	0.75	0.13	4.39
General violence	0.54	1.04	1.71	0.22	13.44
Intimate partner violence/threat	1.26	0.94	3.52	0.54	22.70
Adult sexual violence	0.61	1.10	1.84	0.21	16.29
Childhood sexual violence	0.88	0.82	2.42	0.48	12.26

[†] Missing data are excluded

[‡] B is the unstandardized regression coefficient

[††] 95% confidence intervals are shown. *N = 165*

[a] Reference category is not married

[b] Reference category is non-US citizen

[c] Reference category is unemployed

promotoras gave them more time than the PCPs and listened more attentively. Viewing the *promotoras* as peers, patients emphasized their rapport with them. Overall, interviewed patients viewed the *promotoras*' involvement in their care as positive.

The *promotoras* highlighted the additional time that they could spend with patients; their own ability in diagnosing depression and in addressing contextual sources of depression; and rapport based upon their ability to speak Spanish and to understand cultural differences. They also emphasized the project's value in raising depression awareness among patients, PCPs, and the community at large.

PCPs perceived the intervention's value in the greater amount of time that *promotoras* could spend with patients, improved access to bilingual and culturally appropriate services, patients' increased comfort in discussing difficult issues, and staff members' enhanced awareness of depression. All interviewed PCPs favorably assessed the value of *promotora* services for depression.

Other stakeholders also expressed generally favorable evaluative comments about the intervention. *Non-professional staff members* emphasized improvement of services for depressed patients. *CHC administrators* conveyed a positive perception of the intervention's value. For instance, the CHC network's chief executive officer used the study to obtain third-party reimbursements for mental health services provided by *promotoras*. *Community advisory board members* approved an extension of the *promotora* model to additional CHCs in the network.

Challenges and Opportunities

An unexpected internal challenge involved turnover of clinical staff members, especially at the experimental CHC site. All six PCPs at the experimental CHC who received training about the intervention left the CHC during the project. This turnover reflected transitions in careers and/or family circumstances that did not relate to the intervention. Four new PCPs who joined the staff at the experimental CHC received individualized training from project team members. At the control CHC, four of the six PCPs remained throughout the project.

For two *promotoras,* the project provided opportunities for career advancement. One *promotora* re-entered college studies and eventually finished graduate school in social work. Another *promotora* continued working at a CHC, supported by funding to expand behavioral health services.

On the other hand, one of the original *promotoras* left the project due to serious health and financial problems. Eventually he chose to work in the field of used car refurbishment—an occupation that he viewed as more financially lucrative.

Ethnographic analysis of the intervention contact forms showed that the *promotoras* did identify contextual sources of depression in underemployment, inadequate housing, food insecurity, and violence and intervened appropriately in making referrals and providing other forms of assistance. However, patients of the *promotora* who experienced health and financial problems received these measures less promptly and less consistently than those followed by the *promotora* who remained throughout the project.

Discussion

Overview and Interpretation of Findings

Our research led to mixed findings. The project showed that the *promotora* model for depression care can achieve implementation at CHCs and can generate perceptions of value among a wide cross-section of stakeholders. Despite the favorable observations from the ethnographic evaluation, the quantitative assessment did not reveal a statistically significant impact of the *promotora* intervention on depression, the key targeted outcome.

Several issues may help explain the lack of significant impact in the quantitative assessment. First, as observed in the ethnographic research, sources of clinic "noise" impinged on the fidelity of the intervention's implementation. Unexpected differences between the clinical sites, including a more favorable environment at the control site, may have reduced the intervention's impact as assessed quantitatively. Because the *promotoras'* role remained unclear to some staff members, expectations exceeded the *promotoras'* training or job description. Finally, unpredicted "turf" conflicts arose between MAs and *promotoras*.

Secondly, due to serious illness and financial crisis, one *promotora* could not work with patients for approximately 5 months. After he eventually left the project, substantial delays occurred in hiring a suitable replacement.

Despite extensive re-contact information to assure adequate follow-up, subjects proved more mobile than expected. While the final number of subjects remained large enough to assure adequate statistical power, we remain uncertain if the lack of statistically significant differences reflected issues of fidelity and discontinuity, rather than an ineffective intervention.

Policy Implications

The CHC network followed federal guidelines for integrating behavioral health services within the primary care setting [78]. After this project, the CHC network modified the guidelines to include a *promotora* as a team member. The *promotora's* activities focused on access, contextual problems, and sources of non-adherence.

Negotiations continued between the CHC network and third-party payers for reimbursement of *promotora* services. This process proved partly successful, as one of the 3 for-profit managed care organizations contracting under Medicaid agreed to reimburse specified mental health services offered by *promotoras*. Later, a major behavioral health initiative of state government included a role for *promotoras* as service providers, and the state's Department of Health organized an office focusing on community health workers in primary care and mental health. Such policy changes may provide a precedent for consideration in other geographical areas.

Implications for Research

To assist in policy decisions regarding *promotora* services, we argue for additional research that addresses some issues that we clarified in this study. Such research should take place on a scale large enough and with enough attention to variations in clinical settings to permit more definitive conclusions about the efficacy of *promotoras* as full-fledged members of clinical teams.

Differences in initial CHC environments should receive attention in interventions with *promotoras* or similar community health workers. Selection of clinical sites should consider differences in history and institutional culture. Although budgetary considerations influenced our decision to compare only two CHCs, we now recognize the importance of randomizing an intervention like this one to a larger number of intervention and control CHCs, to address variability among clinical sites.

Research in CHCs should anticipate constraints of clinical staffing. Non-PCP and non-*promotora* staff members should take part in planning research activities. Predictable turnover of PCPs and *promotoras* should receive attention in planning. For instance, we might have identified the problems experienced by one *promotora* earlier and addressed them more effectively. Despite budgetary limitations, we probably should have have employed more than two *promotoras* to reduce the likelihood that unanticipated difficulties experienced by one *promotora* would hinder the intervention and its assessment.

Conclusion

This project aimed to assess the role of *promotoras* in depression care at primary care clinics. Despite unexpected challenges, the *promotoras* achieved wide acceptance and support among stakeholders such as patients, PCPs, and administrators. The ethnographic assessment reached

mainly favorable conclusions about the role of *promotoras* and the value of their work in addressing contextual sources of depression. Nevertheless, the quantitative assessment did not confirm the intervention's favorable impact on depression outcomes.

We remain uncertain about the future role of *promotoras* in depression care. Due to the differences that emerged from the ethnographic and quantitative assessments, the lack of significant quantitative findings to demonstrate the intervention's efficacy becomes less convincing than it otherwise might. Overall, the research effort revealed some of the vicissitudes of implementing and evaluating an intervention that addresses an important problem and that seems on face value to be a good idea.

Given the dire gaps in services that persist in underserved inner cities and rural areas, we favor a further assessment of innovative roles for new mental health practitioners who are firmly rooted in their communities. In such efforts, the sources of depression in contextual problems like underemployment, inadequate housing, food insecurity, and violence—whose importance as predictors of depression this study confirmed—warrant more attention than they have received so far.

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References

1. Kessler, R., Demler, O., Frank, R., et al. (2005). Prevalence and treatment of mental disorders, 1990 to 2003. *New England Journal of Medicine, 352*(24), 2515–2523.
2. National Institute of Mental Health. (2010). *Strategic plan*. Retrieved August 23, 2010 at http://www.nimh.nih.gov/about/strategic-planning-reports/index.shtml.
3. Wang, P. S., Lane, M., Olfson, M., et al. (2005). Twelve-month use of mental health services in the United States: Results from the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*(6), 629–640.
4. Borowsky, S. J., Rubenstein, L. V., Meredith, L. S., et al. (2000). Who is at risk of nondetection of mental health problems in primary care? *Journal of General Internal Medicine, 15*(6), 381–388.
5. Holman, E. A., Silver, R. C., & Waitzkin, H. (2000). Traumatic life events in primary care patients: A study in an ethnically diverse sample. *Archives of Family Medicine, 9*(9), 802–810.
6. Rizzo, V. M., Mizrahi, T., & Kirkland, K. (2005). Psychosocial problems among patients in neighborhood health centers: Perspectives from health care providers. *Journal of Community Health, 30*(2), 125–140.
7. Gallo, J. J., Bogner, H. R., Morales, K. H., et al. (2005). Patient ethnicity and the identification and active management of depression in late life. *Archives of Internal Medicine, 165*(17), 1962–1968.
8. Hansson, M., Chotai, J., Nordstom, A., et al. (2009). Comparison of two self-rating scales to detect depression: HADS and PHQ-9. *British Journal of General Practice, 59*(566), 650–654.
9. Hauenstein, E. J., & Peddada, S. (2007). Prevalence of major depressive episodes in rural women using primary care. *Journal of Health Care for the Poor and Underserved, 18*(1), 185–202.
10. Mitchell, A. J., Vaze, A., & Rao, S. (2009). Clinical diagnosis of depression in primary care: A meta-analysis. *Lancet, 374*(9690), 609–619.
11. Reuland, D. S., Cherrington, A., Watkins, G. S., et al. (2009). Diagnostic accuracy of Spanish language depression-screening instruments. *Annals of Family Medicine, 7*(5), 455–462.
12. Schmaling, K. B., & Hernandez, D. V. (2005). Detection of depression among low-income Mexican Americans in primary care. *Journal of Health Care for the Poor and Undeserved, 16*(4), 780–790.
13. Fleming, M. F., Barry, K. L., Manwell, L. B., et al. (1997). Brief physician advice for problem alcohol drinkers: A randomized controlled trial in community-based primary care practices. *JAMA, 277*(13), 1039–1045.
14. Fleming, M. F., Mundt, M. P., French, M. T., et al. (2000). Benefit-cost analysis of brief physician advice with problem drinkers in primary care settings. *Medical Care, 38*(1), 7–18.
15. Harvey, I., Nelson, S. J., Lyons, R. A., et al. (1998). A randomized controlled trial and economic evaluation of counselling in primary care. *British Journal of General Practice, 48*(428), 1043–1048.
16. Rollman, B. L., Hanusa, B. H., Gilbert, T., et al. (2001). The electronic medical record. A randomized trial of its impact on primary care physicians' initial management of major depression [corrected]. *Archives of Internal Medicine, 161*(2), 189–197.
17. Simon, G. E., VonKorff, M., Heiligenstein, J. H., et al. (1996). Initial antidepressant choice in primary care: Effectiveness and cost of fluoxetine vs tricyclic antidepressants. *JAMA, 275*(24), 1897–1902.
18. Williams, J. W., Barrett, J., Oxman, T., et al. (2000). Treatment of dysthymia and minor depression in primary care: A randomized controlled trial in older adults. *JAMA, 284*(12), 1519–1526.
19. Katon, W., Von Korff, M., Lin, E., et al. (1999). Stepped collaborative care for primary care patients with persistent symptoms of depression: A randomized trial. *Archives of General Psychiatry, 56*(12), 1109–1115.
20. Rost, K., Nutting, P., Smith, J., et al. (2001). Improving depression outcomes in community primary care practice: A randomized trial of the QuEST intervention. *Journal of General Internal Medicine, 16*(3), 143–149.
21. Rubenstein, L. V., Jackson-Triche, M., Unutzer, J., et al. (1999). Evidence-based care for depression in managed primary care practices. *Health Affairs, 18*(5), 89–105.
22. Unutzer, J., Rubenstein, L., Katon, W. J., et al. (2001). Two-year effects of quality improvement programs on medication management for depression. *Archives of General Psychiatry, 58*(10), 935–942.
23. Wells, K. B., Sherbourne, C., Schoenbaum, M., et al. (2000). Impact of disseminating quality improvement programs for depression in managed primary care: A randomized controlled trial. *JAMA, 283*(2), 212–220.
24. Schoenbaum, M., Unutzer, J., Sherbourne, C., et al. (2001). Cost-effectiveness of practice-initiated quality improvement for depression: Results of a randomized controlled trial. *JAMA, 286*(11), 1325–1330.

25. Sherbourne, C. D., Weiss, R., Duan, N., et al. (2004). Do the effects of quality improvement for depression care differ for men and women? Results of a group-level randomized controlled trial. *Medical Care, 42*(12), 1186–1193.
26. Wells, K. B., Schoenbaum, M., Duan, N., et al. (2007). Cost-effectiveness of quality improvement programs for patients with subthreshold depression or depressive disorder. *Psychiatric Services, 58*(10), 1269–1278.
27. Wells, K. B., Sherbourne, C. D., Miranda, J., et al. (2007). The cumulative effects of quality improvement for depression on outcome disparities over 9 years: Results from a randomized, controlled group-level trial. *Medical Care, 45*(11), 1052–1059.
28. Clarke, G. N. (1995). Improving the transition from basic efficacy research to effectiveness studies: Methodological issues and procedures. *Journal of Consulting and Clinical Psychology, 63*(5), 718–725.
29. Dietrich, A. J., Oxman, T. E., Williams, J. W., et al. (2004). Re-engineering systems for the treatment of depression in primary care: Cluster randomised controlled trial. *British Medical Journal, 329*(7466), 602–605.
30. Essock, S. M., Goldman, H. H., Anthony, W. A., et al. (2003). Evidence-based practices: Setting the context and responding to concerns. *Psychiatric Clinics of North America, 26*(4), 919.
31. Gray, G. E., & Pinson, L. A. (2003). Evidence-based medicine and psychiatric practice. *Psychiatric Quarterly, 74*(4), 387–399.
32. Klinkman, M. S. (2003). The role of algorithms in the detection and treatment of depression in primary care. *Journal of Clinical Psychiatry, 64*, 19–23.
33. Bruce, M. L., Ten Have, T. R., Reynolds, C. F., et al. (2004). Reducing suicidal ideation and depressive symptoms in depressed older primary care patients: A randomized controlled trial. *JAMA, 291*(9), 1081–1091.
34. Craven, M. A., & Bland, R. (2006). Better practices in collaborative mental health care: An analysis of the evidence base. *Canadian Journal of Psychiatry*, *51*(6 Suppl 1)*,* 7S–72S.
35. Hegel, M. T., Unutzer, J., Tang, L. Q., et al. (2005). Impact of comorbid panic and posttraumatic stress disorder on outcomes of collaborative care for late-life depression in primary care. *American Journal of Geriatric Psychiatry, 13*(1), 48–58.
36. Hunkeler, E. M., Katon, W., Tang, L., et al. (2006). Long-term outcomes from the IMPACT randomised trial for depressed elderly patients in primary care. *British Medical Journal, 332*(7536), 259–263.
37. Katon, W., Unutzer, J., Fan, M. Y., et al. (2006). Cost-effectiveness and net benefit of enhanced treatment of depression for older adults with diabetes and depression. *Diabetes Care, 29*(2), 265–270.
38. Nutting, P. A., Gallagber, K., Riley, K., et al. (2008). Care management for depression in primary care practice: Findings from the RESPECT-depression trial. *Annals of Family Medicine, 6*(1), 30–37.
39. Nutting, P. A., Gallagher, K. M., Riley, K., et al. (2007). Implementing a depression improvement intervention in five health care organizations: Experience from the RESPECT-depression trial. *Administration and Policy in Mental Health and Mental Health Services Research, 34*(2), 127–137.
40. Oxman, T. E., Schulberg, H. C., Greenberg, R. L., et al. (2006). A fidelity measure for integrated management of depression in primary care. *Medical Care, 44*(11), 1030–1037.
41. Williams, J. W., Katon, W., Lin, E. H. B., et al. (2004). The effectiveness of depression care management on diabetes-related outcomes in older patients. *Annals of Internal Medicine, 140*(12), 1015–1024.
42. Ayalon, L., Arean, P. A., Linkins, K., et al. (2007). Integration of mental health services into primary care overcomes ethnic disparities in access to mental health services between black and white elderly. *American Journal of Geriatric Psychiatry, 15*(10), 906–912.
43. Cooper, L. A., Gonzales, J. J., Gallo, J. J., et al. (2003). The acceptability of treatment for depression among African-American, Hispanic, and white primary care patients. *Medical Care, 41*(4), 479–489.
44. Miranda, J., Bernal, G., Lau, A., et al. (2005). State of the science on psychosocial interventions for ethnic minorities. *Annual Review of Clinical Psychology, 1*, 113–142.
45. Miranda, J., Chung, J. Y., Green, B. L., et al. (2003). Treating depression in predominantly low-income young minority women: A randomized controlled trial. *JAMA, 290*(1), 57–65.
46. Miranda, J., Duan, N. H., Sherbourne, C., et al. (2003). Improving care for minorities: Can quality improvement interventions improve care and outcomes for depressed minorities? Results of a randomized, controlled trial. *Health Services Research, 38*(2), 613–630.
47. Rojas, G., Fritsch, R., Solis, J., et al. (2007). Treatment of postnatal depression in low-income mothers in primary-care clinics in Santiago, Chile: A randomised controlled trial. *Lancet, 370*(9599), 1629–1637.
48. Wells, K., Sherbourne, C., Schoenbaum, M., et al. (2004). Five-year impact of quality improvement for depression: Results of a group-level randomized controlled trial. *Archives of General Psychiatry, 61*(4), 378–386.
49. Stockdale, S. E., Lagomasino, I. T., Siddique, J., et al. (2008). Racial and ethnic disparities in detection and treatment of depression and anxiety among psychiatric and primary health care visits, 1995–2005. *Medical Care, 46*(7), 668–677.
50. Ramos, I. N., May, M., & Ramos, K. S. (2001). Environmental health training of promotoras in *colonias* along the Texas-Mexico border. *American Journal of Public Health, 91*(4), 568–570.
51. Williams, D. M. (2001). *La promotora*: Linking disenfranchised residents along the border to the U.S. healthcare system. *Health Affairs, 20*(3), 212–218.
52. Hanscom, K. L. (2001). Treating survivors of war trauma and torture. *American Psychologist, 56*(11), 1032–1039.
53. McElmurry, B. J., Park, C. G., & Buseh, A. G. (2003). The nurse-community health advocate team for urban immigrant primary health care. *Journal of Nursing Scholarship, 35*(3), 275–281.
54. Nemcek, M. A., & Sabatier, R. (2003). State of evaluation: Community health workers. *Public Health Nursing, 20*(4), 260–270.
55. Zuvekas, A., Nolan, L., Tumaylle, C., et al. (1999). Impact of community health workers on access, use of services, and patient knowledge and behavior. *Journal of Ambulatory Care Management, 22*(4), 33–44.
56. Balcázar, H., Alvarado, M., Cantu, F., et al. (2009). A *promotora de salud* model for addressing cardiovascular disease risk factors in the US-Mexico border region. *Preventing Chronic Disease, 6*(1), A02.
57. Rodríguez, V. M., Conway, T. L., Woodruff, S. I., et al. (2003). Pilot test of an assessment instrument for Latina community health advisors conducting an ETS intervention. *Journal of Immigrant and Minority Health, 5*(3), 129–137.
58. Berg, J., Anderson, N. L., Tichacek, M. J., et al. (2007). One gets so afraid: Latino families and asthma management: An exploratory study. *Journal of Pediatric Health Care, 21*, 361–371.
59. Joshu, C. E., Rangel, L., Garcia, O., et al. (2007). Integration of a *promotora*-led self-management program into a system of care. *Diabetes Educator, 33*, 151S–158S.
60. Lujan, J., Ostwald, S. K., & Ortiz, M. (2007). *Promotora* diabetes interventions for Mexican Americans. *Diabetes Education, 33*(4), 660–670.

61. Sauaia, A., Min, S. J., Lack, D., et al. (2007). Church-based breast cancer screening education: impact of two approaches on Latinas enrolled in public and private health insurance plans. *Preventing Chronic Disease, 4*(4), A99.
62. Anderson, D., O'Toole, M. L., Brownson, C. A., et al. (2007). Integrating depression care with diabetes care in real-world settings: Lessons from the Robert Wood Johnson Foundation Diabetes Initiative. *Diabetes Spectrum, 20*(1), 10–16.
63. Robert Wood Foundation. (2006). *The diabetes initiative of the robert wood foundation*. Retrieved August 23, 2010 from http://rwjf.org/files/research/diabetesinitiativeoverview.pdf.
64. Center for Disease Control and Prevention. (2010). Community health workers/*promotores de salud*: Critical connections in communities. Retrieved August 23, 2010 from http://www.cdc.gov/diabetes/projects/comm.htm.
65. Balcázar, H., Alvarado, M., Hollen, M. L., et al. (2006). Salud para su corazón–NCLR: A comprehensive promotora outreach program to promote heart-healthy behaviors among hispanics. *Health Promotion Practice, 7*(1), 68–77.
66. Teufel-Shone, N. I., Drummond, R., & Rawiel, U. (2005). Developing and adapting a family-based diabetes program at the US-Mexico border. *Preventing Chronic Disease, 2*(1), A20.
67. Conway, T. L., Woodruff, S. I., Edwards, C. C., et al. (2004). Intervention to reduce environmental tobacco smoke exposure in Latino children: Null effects on hair biomarkers and parent reports. *Tobacco Control, 13*(1), 90–92.
68. Hunter, J. B., de Zapien, J. G., Papenfuss, M., et al. (2004). The impact of a *promotora* on increasing routine chronic disease prevention among women aged 40 and older at the US-Mexico border. *Health Education Behavior, 31*(4 Suppl), 18S–28S.
69. Hansen, L. K., Feigl, P., Modiano, M. R., et al. (2005). An educational program to increase cervical and breast cancer screening in Hispanic women: A southwest oncology group study. *Cancer Nursing, 28*(1), 47–53.
70. Welsh, A. L., Sauaia, A., Jacobellis, J., et al. (2005). The effect of two church-based interventions on breast cancer screening rates among Medicaid-insured Latinas. *Preventing Chronic Disease*, *2*(4).
71. Elder, J. P., Ayala, G. X., Campbell, N. R., et al. (2005). Interpersonal and print nutrition communication for a Spanish-dominant Latino population: *Secretos de la buena vida*. *Health Psychology, 24*(1), 49–57.
72. Moreno, P., Saravanan, Y., Levav, I., et al. (2003). Evaluation of the PAHO/WHO training program on the detection and treatment of depression for primary care nurses in Panama. *Acta Psychiatrica Scandinavica, 108*(1), 61–65.
73. Bolton, P., Bass, J., Neugebauer, R., et al. (2003). Group interpersonal psychotherapy for depression in rural Uganda: A randomized controlled trial. *JAMA, 289*(23), 3117–3124.
74. Araya, R., Rojas, G., Fritsch, R., et al. (2003). Treating depression in primary care in low-income women in Santiago, Chile: A randomised controlled trial. *Lancet, 361*(9362), 995–1000.
75. Reinschmidt, K. M. & Chong, J. (2007). *SONRISA:* A curriculum toolbox for *promotores* to address mental health and diabetes. *Preventing Chronic Disease*, *4*(4): A101. Electronic publication September 15.
76. Committee on the Future of Rural Health Care. (2004). *Quality through collaboration: The future of rural health care*. Washington, DC: National Academy of Sciences.
77. President's New Freedom Commission on Mental Health. (2003). Achieving the promise: Transforming mental health care in America. Final Report. Rockville, MD: Department of Health and Human Services.
78. U.S. Health Resources and Service Administration. *Mental health*. Retrieved August 23, 2010 from http://www.hrsa.gov/mentalhealth/default.htm.
79. World Health Organization. (2001). Mental health: New understanding, new hope. World health report. Geneva: World Health Organization.
80. Brown, G. W. (1997). A psychosocial perspective and the aetiology of depression. In A. Honig & H. M. van Praag (Eds.), *Depression: Neurobiological, psychopathological & therapeutic advances*. New York: Wiley.
81. Brown, G. W., & Moran, P. (1994). Clinical and psychosocial origins of chronic depressive episodes I: A community survey. *British Journal of Psychiatry, 165*, 447–456.
82. Brown, G. W., & Moran, P. M. (1997). Single mothers, poverty and depression. *Psychological Medicine, 27*(1), 21–33.
83. Eaton, W. W., Muntaner, C., Bovasso, G., et al. (2001). Socioeconomic status and depressive syndrome: The role of inter- and intra-generational mobility, government assistance, and work environment. *Journal of Health and Social Behavior, 42*(3), 277–294.
84. Tiwari, A., Chan, K. L., Fong, D., et al. (2008). The impact of psychological abuse by an intimate partner on the mental health of pregnant women. *BJOG, 115*(3), 377–384.
85. Duran, B., Malcoe, L. H., Sanders, M., et al. (2004). Child maltreatment prevalence and mental disorders outcomes among American Indian women in primary care. *Child Abuse and Neglect, 28*(2), 131–145.
86. Duran, B., Sanders, M., Skipper, B., et al. (2004). Prevalence and correlates of mental disorders among native American women in primary care. *American Journal of Public Health, 94*(1), 71–77.
87. Escobar, J. I., Waitzkin, H., Silver, R. C., et al. (1998). Abridged somatization: A study in primary care. *Psychosomatic Medicine, 60*(4), 466–472.
88. Sherbourne, C. D., Edelen, M. O., Zhou, A., et al. (2008). How a therapy-based quality improvement intervention for depression affected life events and psychological well-being over time: A 9-year longitudinal analysis. *Medical Care, 46*(1), 78–84.
89. Austin, E. L., Andersen, R., & Gelberg, L. (2008). Ethnic differences in the correlates of mental distress among homeless women. *Women's Health Issues, 18*(1), 26–34.
90. Gelberg, L., Andersen, R. M., & Leake, B. D. (2000). The behavioral model for vulnerable populations: Application to medical care use and outcomes for homeless people. *Health Services Research, 34*(6), 1273–1302.
91. Stein, J. A., Andersen, R., & Gelberg, L. (2007). Applying the Gelberg-Andersen behavioral model for vulnerable populations to health services utilization in homeless women. *Journal of Health Psychology, 12*(5), 791–804.
92. Ansseau, M., Fischler, B., Dierick, M., et al. (2008). Socio-economic correlates of generalized anxiety disorder and major depression in primary care: The GADIS II study (Generalized Anxiety and Depression Impact Survey II). *Depression and Anxiety, 25*(6), 506–513.
93. Fortney, J., Rushton, G., Wood, S., et al. (2007). Community-level risk factors for depression hospitalizations. *Administration and Policy in Mental Health and Mental Health Services Research, 34*(4), 343–352.
94. Gallo, W. T., Bradley, E. H., Dubin, J. A., et al. (2006). The persistence of depressive symptoms in older workers who experience involuntary job loss: Results from the health and retirement survey. *Journals of Gerontology Social Sciences, 61*(4), S221–S228.
95. Gilchrist, G., & Gunn, J. (2007). Observational studies of depression in primary care: What do we know? *BioMed Family Practice, 8*(28), 93.
96. Mascaro, N., Arnette, N. C., Santana, M. C., et al. (2007). Longitudinal relations between employment and depressive symptoms in low-income, suicidal African American women. *Journal of Clinical Psychology, 63*(6), 541–553.

97. Stack, S., & Wasserman, I. (2007). Economic strain and suicide risk: A qualitative analysis. *Suicide and Life-Threatening Behavior, 37*(1), 103–112.
98. Fone, D., Dunstan, F., Williams, G., et al. (2007). Places, people and mental health: a multilevel analysis of economic inactivity. *Social Science and Medicine, 64*(3), 633–645.
99. Galea, S., Ahern, J., Rudenstine, S., et al. (2005). Urban built environment and depression: A multilevel analysis. *Journal of Epidemiology and Community Health, 59*(10), 822–827.
100. Karim, K., Tischler, V., Gregory, P., et al. (2006). Homeless children and parents: Short-term mental health outcome. *International Journal of Social Psychiatry, 52*(5), 447–458.
101. Siefer, K., Finalayson, T. L., Williams, D. R., et al. (2007). Modifiable risk and protective factors for depressive symptoms in low-income African American mothers. *American Journal of Orthopsychiatry, 77*(1), 113–123.
102. Alegría, M., Pérez, D. J., & Williams, S. (2003). The role of public policies in reducing mental health status disparities for people of color. *Health Affairs (Milwood), 22*(5), 51–64.
103. Casey, P., Goolsby, S., Berkowitz, C., et al. (2004). Maternal depression, changing public assistance, food security, and child health status. *Pediatrics, 113*(2), 298–304.
104. Chilton, M., & Booth, S. (2007). Hunger of the body and hunger of the mind: African American women's perceptions of food insecurity, health and violence. *Journal of Nutrition, Education and Behavior, 39*(3), 116–125.
105. Huddleston-Casas, C., Charnigo, R., & Simmons, L. A. (2009). Food insecurity and maternal depression in rural, low-income families: A longitudinal investigation. *Public Health Nutrition, 12*(8), 1133–1140.
106. Kim, K., & Frongillo, E. A. (2007). Participation in food assistance programs modifies the relation of food insecurity with weight and depression in elders. *Journal of Nutrition, 137*(4), 1005–1010.
107. Siefert, K., Heflin, C. M., Corcoran, M. E., et al. (2004). Food insufficiency and physical and mental health in a longitudinal survey of welfare recipients. *Journal of Health and Social Behavior, 45*(2), 171–186.
108. Weigel, M. M., Armijos, R. X., Hall, Y. P., et al. (2007). The household food insecurity and health outcomes of U.S.-Mexico border migrant and seasonal farmworkers. *Journal of Immigrant and Minority Health, 9*(3), 157–169.
109. Whitaker, R. C., Phillips, S. M., & Orzol, S. M. (2006). Food insecurity and the risks of depression and anxiety in mothers and behavior problems in their preschool-aged children. *Pediatrics, 118*(3), e859–e868.
110. Clark, C., Ryan, L., Kawachi, I., et al. (2008). Witnessing community violence in residential neighborhoods: A mental health hazard for urban women. *Journal of Urban Health Bulletin of the New York Academy of Medicine, 85*(1), 22–38.
111. Coker, A. L., Smith, P. H., & Fadden, M. K. (2005). Intimate partner violence and disabilities among women attending family practice clinics. *Journal of Women's Health, 14*(9), 829–838.
112. Dervic, K., Grunebaum, M. F., Burke, A. K., et al. (2006). Protective factors against suicidal behavior in depressed adults reporting childhood abuse. *Journal of Nervous and Mental Disease, 194*(12), 971–974.
113. Fedovskiy, K., Higgins, S., & Paranjape, A. (2008). Intimate partner violence: How does it impact major depressive disorder and post traumatic stress disorder among immigrant Latinas? *Journal of Immigrant and Minority Health, 10*(1), 45–51.
114. Fogarty, C. T., Fredman, L., Heeren, T. C., et al. (2008). Synergistic effects of child abuse and intimate partner violence on depressive symptoms in women. *Preventive Medicine, 46*(5), 463–469.
115. Geiger-Brown, J., Muntaner, C., McPhaul, K., et al. (2007). Abuse and violence during home care work as predictor of worker depression. *Home Health Care Services Quarterly, 26*(1), 59–77.
116. Goldstein, A. L., Walton, M. A., Cunningham, R. M., et al. (2007). Violence and substance use as risk factors for depressive symptoms among adolescents in an urban emergency department. *Journal of Adolescent Health, 40*(3), 276–279.
117. Hicks, M. H. R., & Li, Z. H. (2003). Partner violence and major depression in women: A community study of Chinese Americans. *Journal of Nervous and Mental Disease, 191*(11), 722–729.
118. Koopman, C., Ismailji, T., Palesh, O., et al. (2007). Relationships of depression to child and adult abuse and bodily pain among women who have experienced intimate partner violence. *Journal of Interpersonal Violence, 22*(4), 438–455.
119. Storr, C. L., Ialongo, N. S., Anthony, J. C., et al. (2007). Childhood antecedents of exposure to traumatic events and posttraumatic stress disorder. *American Journal of Psychiatry, 164*(1), 119–125.
120. Matt, G. E., Bellardita, L., Fischerand, G., et al. (2006). Psychological resources and mental health among the difficult to employ: Can a pre-employment training program make a difference? *Journal of Vocational Rehabilitation, 24*(1), 33–43.
121. Vinokur, A. D., Schul, Y., Vuori, J., et al. (2000). Two years after a job loss: Long-term impact of he JOBS program on reemployment and mental health. *Journal of Occupational Health Psychology, 5*(1), 32–47.
122. Vuori, J., & Silvonen, J. (2005). The benefits of a preventive job search program on re-employment and mental health at two-year follow-up. *Journal of Occupational & Organizational Psychology, 78*, 43–52.
123. Fauth, R. C., Leventhal, T., & Brooks-Gunn, J. (2004). Short-term effects of moving from public housing in poor to middle-class neighborhoods on low-income, minority adults' outcomes. *Social Science and Medicine, 59*(11), 2271–2284.
124. Katz, L. F., Kling, J. R., & Liebman, J. B. (2001). Moving to opportunity in Boston: Early results of a randomized mobility experiment. *Quarterly Journal of Economics, 116*(2), 607–654.
125. Kling, J. R., Liebman, J. B., & Katz, L. F. (2007). Experimental analysis of neighborhood effects. *Econometrica, 75*(1), 83–119.
126. Leventhal, T., & Brooks-Gunn, J. (2003). Moving to opportunity: An experimental study of neighborhood effects on mental health. *American Journal of Public Health, 93*(9), 1576–1582.
127. Sullivan, C. M., Bybee, D. I., & Allen, N. E. (2002). Findings from a community-based program for battered women and their children. *Journal of Interpersonal Violence, 17*(9), 915–936.
128. Gassman-Pines, A., & Yoshikawa, H. (2006). Five-year effects of an anti-poverty program on marriage among never-married mothers. *Journal of Policy Analysis and Management, 25*(1), 11–30.
129. Miranda, J., Azocar, F., Organista, K. C., et al. (2003). Treatment of depression among impoverished primary care patients from ethnic minority groups. *Psychiatric Services, 54*(2), 219–225.
130. Borrell-Carrio, F., Suchman, A. L., & Epstein, R. M. (2004). The biopsychosocial model 25 years later: Principles, practice, and scientific inquiry. *Annals of Family Medicine, 2*(6), 576–582.
131. Engel, G. L. (1977). Need for a new medical model: Challenge for biomedicine. *Science, 196*(4286), 129–136.
132. U.S. Census Bureau. (2008). *Statistical abstract of the United States: 2005.* Personal income per capita in constant in dollars, 2007. Retrieved August 23, 2010 from http://www.census.gov/statab/ranks/rank34.html.

133. U. S. Bureau. (2005). *Statistical abstract of the United States: 2005. Persons below poverty level*. Washington, DC: Government Printing Office.
134. U. S. Census Bureau. (2005). *Statistical abstract of the United States: 2005*. Washington, DC: Government Printing Office.
135. U. S. Census Bureau. (1999). *Statistical abstract of the United States: 1999*. Washington, DC: Government Printing Office.
136. U. S. Census Bureau. (2005). *Statistical abstract of the United States: 2006*. Washington, DC: Government Printing Office.
137. Morgan, K. O., & Morgan, S. (2007). *Health care state rankings 2005: Health care in the 50 United States*. Lawrence, KS: Morgan Quitno Press.
138. Waitzkin, H., Yager, J., Parker, T., & Duran, B. (2006). Mentoring partnerships for minority faculty and graduate students in mental health services research. *Academic Psychiatry, 30*(3), 205–217.
139. Brody, D. S., Hahn, S. R., Spitzer, R. L., et al. (1998). Identifying patients with depression in the primary care setting: A more efficient method. *Archives of Internal Medicine, 158*(22), 2469–2475.
140. Connelly, J. E., Wofford, A. B., & Philbrick, J. T. (2000). Healthy patients who perceive poor health: Why are they worried sick? *American Journal of the Medical Sciences, 320*(1), 36–42.
141. Hahn, S. R. (2001). Physical symptoms and physician-experienced difficulty in the physician-patient relationship. *Annals of Internal Medicine, 134*(9), 897–904.
142. Jackson, J. L., Houston, J. S., Hanling, S. R., et al. (2001). Clinical predictors of mental disorders among medical outpatients. *Archives of Internal Medicine, 161*(6), 875–879.
143. Lefevre, F., Reifler, D., Lee, P., et al. (1999). Screening for undetected mental disorders in high utilizers of primary care services. *Journal of General Internal Medicine, 14*(7), 425–431.
144. Miranda, J., Azocar, F., Komaromy, M., et al. (1998). Unmet mental health needs of women in public-sector gynecologic clinics. *American Journal of Obstetrics and Gynecology, 178*(2), 212–217.
145. Schriger, D. L., Gibbons, P. S., Langone, C. A., et al. (2001). Enabling the diagnosis of occult psychiatric illness in the emergency department: A randomized, controlled trial of the computerized, self-administered PRIME-MD diagnostic system. *Annals of Emergency Medicine, 37*(2), 132–140.
146. Spitzer, R. L., Williams, J. B., Kroenke, K., et al. (2000). Validity and utility of the PRIME-MD Patient Health Questionnaire in assessment of 3000 obstetric-gynecologic patients: The PRIME-MD Patient Health Questionnaire Obstetrics Gynecology Study. *American Journal of Obstetrics and Gynecology, 183*(3), 759–769.
147. Thompson, M. A., Unützer, J., Katon, W. J., et al. (1999). Detection and treatment of depressive syndromes in a rural island clinic. *Journal of the American Board of Family Medicine, 12*(2), 120–127.
148. Olfson, M., Shea, S., Feder, A., et al. (2000). Prevalence of anxiety, depression, and substance use disorders in an urban general medicine practice. *Archives of Family Medicine, 9*(9), 876–883.
149. Baca, E., Saiz, J., Aguera, L., et al. (1999). Validation of the Spanish version of PRIME-MD: A procedure for diagnosing mental disorders in primary care. *Actas Espanolas De Psiquiatria, 27*(6), 375–381.
150. Baca-Baldomero, E., Sáiz-Ruiz, J., Agüera-Ortiz, L. F., et al. (1999). Prevalencia de los trastornos psiquiátricos en atención primaria usando el cuestionario PRIME-MD. *Actas Españolas de Psiquiatría, 27*(6), 375–383.
151. McIntyre, L. M., Butterfield, M. I., Nanda, K., et al. (1999). Validation of a trauma questionnaire in veteran women. *Journal of General Internal Medicine, 14*(3), 186–189.
152. Paranjape, A., & Liebschutz, J. (2003). STAT: A three-question screen for intimate partner violence. *Journal of Women's Health and Gender-Based Medicine, 12*(3), 233–239.
153. Agency for Healthcare Research and Quality. (2009). The treatment and management of depression in adults. Retrieved August 23, 2010 from http://www.guideline.gov/content.aspx?id=15521&search=depression.
154. Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: L. Erlbaum Associates.
155. Hinlus, J. (2001). *NCCS-PASS*. Kaysville, UT: NCSS Statistical Software.
156. Peduzzi, P., Concato, J., Kemper, E., et al. (1996). A simulation study of the number of events per variable in logistic regression analysis. *Journal of Clinical Epidemiology, 49*(12), 1373–1379.
157. Menard, S. (2001). *Applied logistic regression analysis*. Thousand Oaks, CA: Sage.
158. QSR International. (2010). NVivo 8. Retrieved August 23, 2010 from http://www.qsrinternational.com.
159. Emerson, R. M., Fretz, R. I., & Shaw, L. L. (1995). *Writing ethnographic fieldnotes*. Chicago: University of Chicago Press.
160. Patton, M. Q. (1999). Enhancing the quality and credibility of qualitative analysis. *Health Services Research, 34*(5), 1189–1208.
161. Getrich, C., Heying, S., Willging, C., et al. (2007). An ethnography of clinic "noise' in a community-based, promotora-centered mental health intervention. *Social Science and Medicine, 65*(2), 319–330.