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

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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

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-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 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 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 *promotora*s) 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 *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.

Acknowledgments

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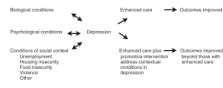
Fig. 1.
Conceptual framework for the proposed research

Fig. 2.
Primary care practitioner–*promotora* algorithm

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

Table 2

Prevalence of mental disorders and predictors of depression

Diagnosis	Present N (%)	Absent N (%)	Total N[†]
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

	Depressed N (%)	Not depressed N (%)	Chi-square (p value)
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)	

	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)	

	Depressed N (%)	Not depressed N (%)	Chi-square (p value)
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

	B[‡]	Standard error of B	Odds ratio	Confidence interval[††]	
				Lower bound	Upper bound
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