

# Community Engagement Compared With Technical Assistance to Disseminate Depression Care Among Low-Income, Minority Women: A Randomized Controlled Effectiveness Study

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**Objectives.** To compare the effectiveness of a (CEP) versus a technical assistance approach (Resources for Services, or RS) to disseminate depression care for low-income ethnic minority women.

**Methods.** We conducted secondary analyses of intervention effects for largely low-income, minority women subsample ( $n = 595$ ; 45.1% Latino and 45.4% African American) in a matched, clustered, randomized control trial conducted in 2 low-resource communities in Los Angeles, California, between 2010 and 2012. Outcomes assessed included mental health, socioeconomic factors, and service use at 6- and 12-month follow-up.

**Results.** Although we found no intervention difference for depressive symptoms, there were statistically significant effects for mental health quality of life, resiliency, homelessness risk, and financial difficulties at 6 months, as well as missed work days, self-efficacy, and care barriers at 12 months favoring CEP relative to RS. CEP increased use of outpatient substance abuse services and faith-based depression visits at 6 months.

**Conclusions.** Engaging health care and social community programs may offer modest improvements on key functional and socioeconomic outcomes, reduce care barriers, and increase engagement in alternative depression services for low-income, predominantly ethnic minority women. (*Am J Public Health.* 2016;106:1833–1841. doi:10.2105/AJPH.2016.303304)

Depression is expected to be the second-leading cause of adult disability worldwide by 2030.<sup>1</sup> Women have 1.5 to 3 times the risk of depression as men.<sup>2</sup> In addition, poverty and mental illness interact in a negative spiral,<sup>3</sup> especially for low-income minority women, who are exposed to greater environmental stressors and have limited access to resources, which can increase the risk of depression morbidity and mortality.<sup>4,5</sup> Thus, depression interventions for low-income, ethnic minority women may benefit from service planning that takes into consideration socioeconomic factors.

Despite the great need, low-income, ethnic minority communities continue to

have significant barriers to accessing available mental health services because of low depression literacy, mental health stigma, inconsistent transportation, child care, work schedules, cost, and being uninsured.<sup>5,6</sup> In addition, mental health care systems in low-income communities are often under-resourced, with provider shortages and

highly variable availability of evidence-based and quality depression services.<sup>7,8</sup>

Primary care-based depression quality improvement (QI) has been recommended to address this gap. Depression QI interventions incorporating screening, care coordination, psychoeducation, and evidence-based treatments have increased access to and the quality of depression care for diverse, low-resource settings worldwide.<sup>9,10</sup> However, despite the effectiveness of depression QI, little research exists on the best strategies to disseminate communitywide depression QI in low-income, underresourced communities. Given the barriers to accessing care and the long-standing distrust in low-income ethnic communities of both research and services, community engagement models may support health systems to scale up depression QI to meet Affordable Care Act mandates. For example, current policy initiatives such as Medicaid Behavioral Health Homes and Accountable Care Communities incentivize partnerships across general medical, mental health, and social and community sectors to manage chronic illnesses in low-income communities.<sup>11</sup> However, limited systematic evidence exists to inform policymakers on strategies for partnerships across health and community-based agencies to address

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depression identification and care coordination, while concurrently attending to community context and individual social risk factors such as homelessness.<sup>12</sup>

Community Partners in Care (CPIC) is the first randomized study to compare communitywide dissemination models for depression care for underresourced, ethnic minority communities in the United States. CPIC expands more traditional QI to engage a larger network of health and community-social sectors for depression identification and care, using community-partnered participatory research,<sup>13,14</sup> a community-based participatory research model to address health disparities.<sup>15</sup> The trial compared a community engagement and planning participatory network (CEP) approach with a technical assistance approach (Resources for Services, or RS) and found that CEP, which supported the community in implementing a communitywide network for depression care, improved clients' mental health quality of life and mental wellness, increased physical activity, reduced homelessness risk factors, and reduced rates of behavioral health hospitalization and medication visits among specialty care users at 6-month follow-up. CEP increased primary care and public health visits for depression and use of faith-based and park programs for depression.<sup>16</sup> At 12-month follow-up, we found reductions in poor mental health quality of life and reduced hospitalizations in CEP relative to RS, but they were sensitive to statistical modeling.<sup>17</sup> These findings suggest the importance of community collaboration, activation of community networks, and, particularly, the role of faith-based and community-trusted organizations to address unmet depression needs in underresourced populations.

CPIC's CEP dissemination strategy for depression QI focused on activating community networks to develop community-tailored solutions to improve depression services, which we believe to be particularly effective for addressing mental health and social risk factors for low-income, ethnic minority women. The expanded partnerships under CEP may more effectively address financial stressors, provide social support, and overcome barriers to services. This secondary analysis focused on intervention outcomes for women in the CPIC study,

to determine whether the added benefits of CEP relative to RS observed for the whole sample also applied specifically to women, in terms of health, functional, and social indicators (financial risk factors, life difficulties) and service utilization at 6 and 12 months.

## METHODS

CPIC is a group-level, randomized comparative effectiveness trial designed and implemented using community-partnered participatory research model that promotes equal authority and coleadership of community and academic partners in all research phases, following principles of community engagement. Our process was guided by a partnered and jointly owned formal infrastructure headed by a community-academic council that supported work groups and community forums to build capacity in both community and academic contexts for culturally sensitive, evidence-based practice that could be sustained beyond the study period.<sup>15,18</sup> The study's community-partnered participatory research process, design details, and results at baseline, 6-month follow-up, and 12-month follow-up can be found in previous publications.<sup>16,17,19,20</sup>

## Interventions

The interventions represent 2 dissemination models for depression QI across health, social service, and other community-based programs. Both RS and CEP used the same evidence-based depression QI toolkits, originally developed in We Care<sup>21</sup> and Partners in Care,<sup>22</sup> which included manuals for cognitive behavioral therapy for depression,<sup>23,24</sup> clinician assessment and medication management, care managers to support depression screening, care coordination and treatment adherence, and patient education materials. All materials were available in hard copy, on a Web site, and on flash drives, and were introduced together with the study design to community agencies in kickoff conferences prior to enrollment.

**Resources for Services.** RS used culturally competent outreach to engage programs and provide technical assistance to implement QI components, using a "train-the-trainer" approach to build capacity in depression care

from December 2009 through July 2010. An expert team of 3 psychiatrists, a nurse care manager, a cognitive behavioral therapy trainer, a QI expert, and support staff worked with a community outreach specialist to offer 12 webinars on team management, cognitive behavioral therapy, care management, and patient education. Site visits were also provided to primary care sites to train providers on medication management.

**Community Engagement and Planning.** CEP involved a community-academic partnered process to colead, develop, and implement a written training and implementation plan tailored by community and academic partners for both the South Los Angeles and Hollywood communities between December 2009 and July 2011. CEP promoted community engagement, 2-way capacity building, and shared project participation and ownership. The CEP plans featured multiple community conferences, additional as-needed training sessions for individual programs, webinars and supervision, and webinars on cognitive behavior therapy and case management for therapists, case managers and health workers. The CEP process led to the development of innovations such as adding alternative medicine to medication management, incorporation of provider self-care to trainings, book clubs, and a resiliency intervention. Trainings were also led by program staff, community partners, and study experts. (See Khodyakov et al.<sup>25</sup> for more details on CEP features, process, and experiences.) CEP offered more training opportunities, had more staff participation, and provided more total training hours than RS.<sup>26</sup>

## Sample and Randomization

We conducted the CPIC study in 2 communities in Los Angeles County Service Planning Areas—South Los Angeles and Hollywood—Metropolitan—that have high rates of unemployment, homelessness, and avoidable hospitalizations and low rates of insurance.

**Agencies and programs.** Using county lists and partner nominations, we recruited agencies and venues offering services identified by community members as relevant to

depression (mental health specialty, primary care and public health, substance abuse, social services, faith-based services, park centers, hair salons, and exercise clubs). Eligible agencies offered services to adults or parents of children, were financially stable (i.e., expected to operate 1–3 years), and were selected to oversample 4 community-prioritized subgroups (the homeless, seniors, African Americans, those in substance abuse programs). Eligible programs included those (1) serving 15 or more clients per week, (2) having 2 or more staff members (or 1 or more for senior centers, businesses, and faith-based programs), and (3) not focused on psychotic disorders or home services. Within each community, we paired programs into units based on location, service sector, size, and funding sources, with large agencies as 1 stratum. Within pairs, units were randomized to each intervention by a statistician uninvolved in recruitment. Agency and program enrollment occurred November 6, 2008, through August 17, 2010. Within 60 potentially eligible agencies having 194 programs, we confirmed that 133 programs were potentially eligible and randomized them (65 RS, 68 CEP). To finalize enrollment, postrandomization site visits were conducted by RAND staff blinded to assignment; 20 programs were ineligible, 18 programs refused, and 95 programs from 50 consenting agencies enrolled (46 RS, 49 CEP). Sensitivity analyses found that participating and nonparticipating programs were comparable by age, gender, race, population density, and income by zip code–level census tract data (each  $P > .10$ ).<sup>16,20</sup>

**Client participants.** Within programs, between March 2010 and November 2010, clients were screened for eligibility in waiting rooms or at events by community members blinded to intervention condition and supervised by RAND. Staff approached 4649 adults per program over 2 to 3 days; 4440 (95.5%) agreed to screening in 93 enrolled programs. Study eligibility was limited to clients providing contact information and screening positively for depression (i.e., scoring  $\geq 10$  on the 8-item Patient Health Questionnaire [PHQ-8]).<sup>27</sup> Of 4440 screened, 1322 (29.8%) were eligible, and of these, 1246 (94.3%) consented. RAND survey staff blinded to intervention condition conducted telephone surveys on 981

participants at baseline, 759 at 6-month follow-up, and 733 at 12-month follow-up. The study main analytic sample comprised 1018 participants (77% of those eligible, 82% of those enrolled) who completed 1 assessment at baseline or at 6- or 12-month follow-up; the 595 female participants constituted the analytic sample.<sup>16,17</sup> Figure 1 shows the study profile.

## Baseline and Outcome Assessment

Baseline measures from screener and telephone surveys included demographics (age, gender); the presence of at least 3 of 18 chronic physical health conditions (e.g., diabetes, cancer, heart disease); educational level and race/ethnicity; physical and mental health scores from the 12-item Short Form Health Survey (SF-12)<sup>28</sup>; and an indicator of meeting census poverty thresholds by size of family and number of children in 2010. Using the Mini International Neuropsychiatric Interview 6,<sup>29</sup> an empirically validated structured diagnostic interview,<sup>30,31</sup> we created indicators for probable major depressive or dysthymic disorder in the past 12 months, current mania, recent anxiety (in the past month for panic or posttraumatic stress or the past 6 months for generalized anxiety disorder), and alcohol abuse or use of illicit drugs in the past 12 months.

**Client outcomes.** Mental health and functioning outcomes included depression symptoms (PHQ-9)<sup>32</sup> and poor mental health–related quality of life (i.e.,  $\leq 40$  [1 SD below population mean] on the 12-item Mental Health Component Score<sup>28</sup>).<sup>33</sup>

**Resilience.** A community-partnered process resulted in outcomes prioritized by community members to assess wellness and resilience. We defined mental wellness as “at least a good bit of time” (score of  $\geq 3$  on a 6-point Likert scale, range = 1–6) on any of 3 items: feeling calm or peaceful,<sup>34</sup> having energy, or being happy in the prior 4 weeks.<sup>16</sup> We identified physical activity as an indicator of resiliency; using a single 6-point Likert scale item, we defined it as being at least fairly physically active.<sup>16</sup>

**Socioeconomic indicators.** Employment indicators included single items on working for pay and number of missed work days in the past 30 days among those employed.

Homelessness risk included either currently being homeless or living in a shelter, or having multiple risk factors for future homelessness; these included having no place to stay for 2 or more nights in the past 6 months or eviction from primary residence, a financial crisis, or food insecurity in the past 6 months.<sup>35,36</sup>

We measured life stressors by the presence over the past 12 months of various stressful events, divided into 3 subscales: financial problems (8 items; e.g., laid off or fired from work), loss and trauma (3 items; e.g., “someone close to me died”), and relationship problems (3 items; e.g., serious argument with someone at home).<sup>37</sup>

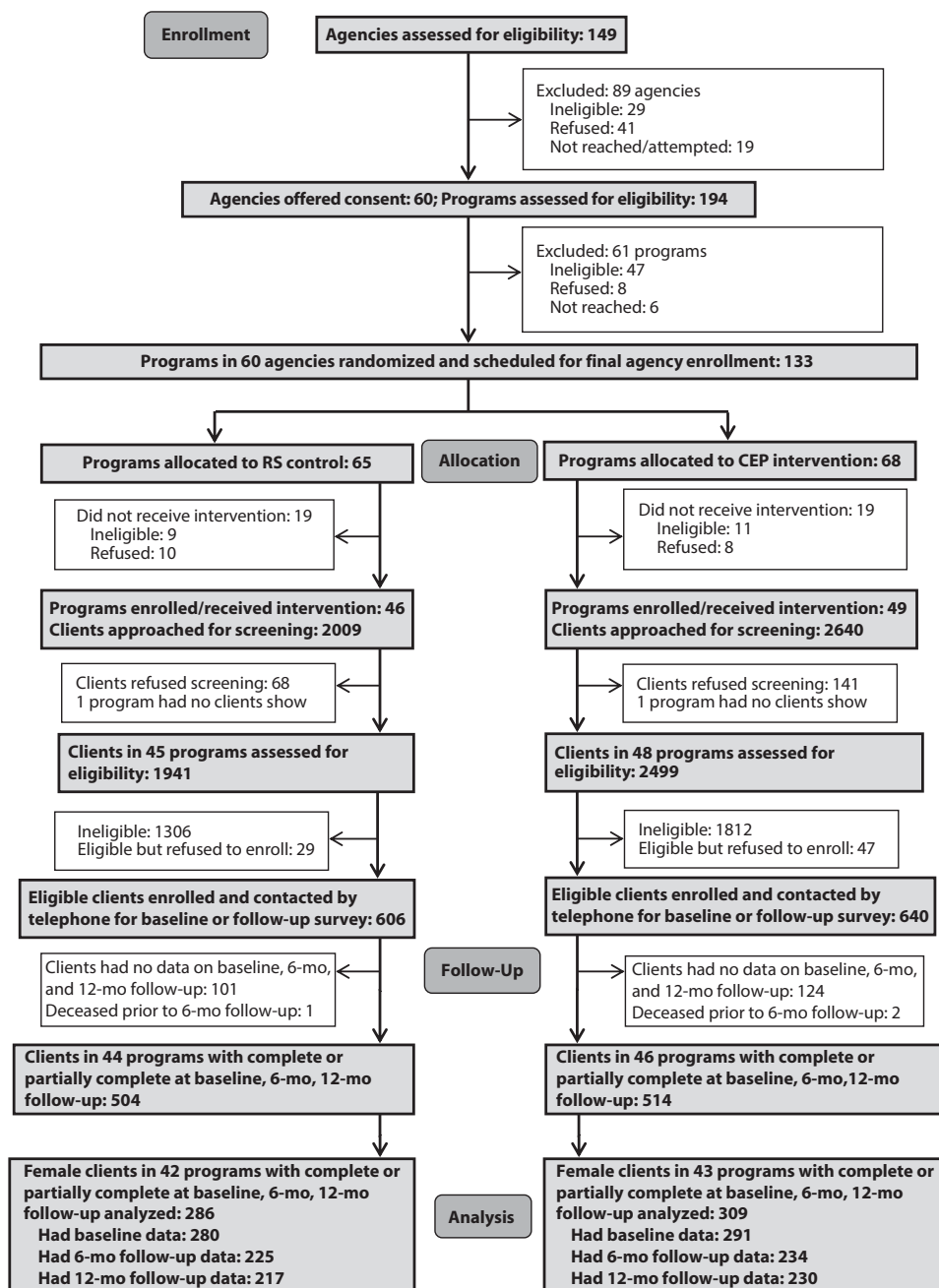
Barriers to care included questions about structural barriers (7 items; e.g., high cost, no one at clinic speaking respondent’s language) and logistical barriers (4 items; e.g., not being able to get an appointment, no child care).<sup>38</sup>

We assessed depression-related self-efficacy by averaging 3 items on a 10-point scale in which respondents indicated (at baseline and 12-month follow-up) how confident they were that they could overcome or control depression, take effective action to treat depression, and manage the side effects of antidepressant medications.<sup>39</sup> Only 1 item (“How confident are you in your ability to overcome or control a bout of depression?”) was assessed at 6-month follow-up.

**Service use.** We developed service use indicators based on counts in the last 6 months for the following: overnight hospital stays for mental health or substance abuse, emergency department visits, outpatient mental health, self-help groups, outpatient primary care or public health, outpatient substance abuse, overnight substance abuse rehabilitation, social services, faith-based programs, and park community centers. For mental health service utilizers, we developed counts of medication and counseling visits. For other sectors, we developed number of visits at which clients reported receiving information, referral, counseling, or medication management for depression or mental health.

## Data Analysis

We examined intervention effects to determine whether CEP was more effective



Note. CEP = Community Engagement and Planning; RS = Resources for Services, or individual program technical assistance.

FIGURE 1—Trial Profile: Community Partners in Care, Women's Substudy, Los Angeles, CA, 2010–2012

than RS in improving mental health and functioning, resiliency, economic risk, stressors, barriers to care, self-efficacy, and service utilization for low-income minority women. We described baseline differences between CEP and RS using bivariate analyses. We conducted intent-to-treat analyses, in which patients were included in

the analysis according to their original assignment, irrespective of whether they received services from the location where they were initiated into care or whether they used intervention resources. We used linear regression for continuously scaled outcome variables, logistic regression for dichotomous measures, and Poisson

regression models for counts, with intervention status as the independent variable. Consistent with group-randomized trial recommendations,<sup>40</sup> we adjusted for baseline status of dependent variables and covariates (age, education, race/ethnicity, prior 12-month depressive disorder, and community). We adjusted barriers to

**TABLE 1—Baseline Sociodemographic, Clinical, and Social Risk Factors: Community Partners in Care, Women's Substudy, Los Angeles, CA, 2010–2012**

Variable	Overall (n = 595), No. (%) or Mean $\pm$ SD	RS (n = 286), No. (%) or Mean $\pm$ SD	CEP (n = 309), No. (%) or Mean $\pm$ SD
Age, y	45.0 $\pm$ 13.0	44.0 $\pm$ 12.6	45.8 $\pm$ 13.4
Race/ethnicity			
Latino	262 (45.1)	117 (41.5)	145 (48.2)
African American	283 (45.4)	141 (48.3)	142 (42.8)
Non-Hispanic White	38 (7.1)	18 (7.0)	20 (7.2)
Other	12 (2.4)	10 (3.1)	2 (1.7)
Married or living with partner	146 (24.4)	76 (26.4)	70 (22.7)
< high school education	285 (47.9)	137 (47.7)	147 (48.0)
Income under federal poverty level	445 (74.8)	203 (71.2)	241 (78.0)
Family income from work past 12 mo $\leq$ \$10 000	438 (73.0)	208 (73.0)	230 (73.0)
Working for pay	123 (20.8)	63 (22.2)	60 (19.6)
Any missed work day in last 30 d among employed (n = 123)	76 (61.7)	39 (62.4)	37 (60.8)
Mental health and well-being			
Depressive disorder in past 12 mo	344 (57.9)	163 (57.6)	181 (58.2)
Alcohol abuse or use of illicit drugs in past 12 mo	182 (30.5)	70 (24.5)	112 (35.8)
PHQ-8	14.8 $\pm$ 4.1	15.0 $\pm$ 4.1	14.6 $\pm$ 4.0
Poor mental health quality of life, MCS-12 $\leq$ 40	311 (51.8)	155 (54.8)	156 (49.3)
Mental wellness	240 (40.1)	110 (37.8)	130 (42.1)
Physical activity	271 (45.8)	136 (47.8)	134 (44.0)
Chronic health conditions $\geq$ 2	317 (54.2)	151 (53.5)	166 (54.8)
Social determinants and risk factors			
Homeless or $\geq$ 2 risk factors for homelessness	285 (48.6)	148 (52.6)	137 (45.0)
No health insurance	273 (46.6)	135 (47.1)	138 (46.2)
Life difficulties total score	3.8 $\pm$ 2.6	4.0 $\pm$ 2.6	3.6 $\pm$ 2.7
Financial difficulties subscale	2.3 $\pm$ 1.8	2.5 $\pm$ 1.8	2.2 $\pm$ 1.8
Loss and trauma subscale	0.5 $\pm$ 0.7	0.5 $\pm$ 0.6	0.4 $\pm$ 0.7
Relationship problems subscale	0.9 $\pm$ 0.9	0.9 $\pm$ 0.9	0.8 $\pm$ 0.9
Depression treatment self-efficacy	5.9 $\pm$ 2.3	5.9 $\pm$ 2.3	6.0 $\pm$ 2.3

Note. CEP = Community Engagement and Planning; MCS-12 = 12-item Mental Health Component Summary Score; PHQ-8 = 8-item Patient Health Questionnaire; RS = Resources For Services, or individual program technical assistance. Data were multiply imputed and weighted for eligible sample for enrollment;  $\chi^2$  test was used for a comparison between the 2 groups, accounting for the design effect of the cluster randomization;  $P > .05$  for all comparisons.

care—measured only at follow-ups—for baseline insurance status, a proxy for barriers to care.

The CPIC main study used nonresponse weighting<sup>41,42</sup> to address missing data for nonenrollment among eligible clients and for attrition. We also used a hot-deck multiple imputation technique for item nonresponse and an approximate Bayesian bootstrap for unit nonresponse among the analytic sample. We conducted imputations for less than 5% for all variables except for baseline income and Mini International Neuropsychiatric Interview variables,

which had higher rates of item-level missingness. For all female subpopulation analyses, we used Taylor series linearization with a subpopn statement in SUDAAN version 11.0.1 (RTI International, Research Triangle, NC), accounting for clustering (clients within programs),<sup>43</sup> weighting, and multiple imputations.<sup>44</sup> Significance of comparisons by intervention status was based on regression coefficients. Results of linear regression models are presented as between-group difference, logistic regression models are presented as odds ratios, and Poisson regression models

are presented as incidence rate ratios with 95% confidence intervals; we considered  $P < .05$  to be statistically significant. We illustrate results for intervention groups adjusted for covariates using standardized predictions generated from fitted regression models.<sup>45</sup> The detailed procedure, which has been described elsewhere,<sup>16,17</sup> is given in the Appendix (available as a supplement to the online version of this article at <http://www.ajph.org>).

In addition to our primary analyses, we conducted 2 sensitivity analyses to ascertain whether our findings were sensitive

**TABLE 2—Clients' Health, Functional, and Social Outcomes at 6- and 12-Month Follow-Up, by Intervention Status: Community Partners in Care, Women's Substudy, Los Angeles, CA, 2010–2012**

Variable	RS Estimate, Mean or % (95% CI)	CEP Estimate, Mean or % (95% CI)	Between-Group Difference or OR (95% CI)
<b>6-mo follow-up (n = 595)</b>			
Depression symptoms, PHQ-9	12.8 (11.7, 13.8)	12.4 (11.4, 13.5)	-0.35 (-1.87, 1.17)
Total no. life stressors	2.9 (2.6, 3.3)	2.6 (2.3, 2.9)	-0.33 (-0.68, 0.01)
Financial difficulties	1.8 (1.6, 2.0)	1.6 (1.4, 1.8)	-0.27 (-0.54, -0.01)
Relationship problems	0.6 (0.5, 0.7)	0.6 (0.5, 0.7)	-0.06 (-0.17, 0.06)
Loss and trauma	0.4 (0.3, 0.5)	0.4 (0.3, 0.4)	-0.04 (-0.13, 0.06)
No. structure barriers	1.5 (1.3, 1.8)	1.5 (1.3, 1.7)	-0.02 (-0.33, 0.28)
No. logistic barriers	1.1 (0.9, 1.2)	1.1 (1.0, 1.3)	0.06 (-0.11, 0.24)
Depression self-efficacy <sup>a</sup>	5.9 (5.5, 6.3)	6.2 (5.7, 6.7)	0.29 (-0.40, 0.97)
Poor mental health QOL MCS-12 ≤ 40 <sup>b</sup>	55.1 (48.8, 61.2)	43.5 (37.0, 50.2)	0.62 (0.43, 0.88)
Hazardous drinker or alcohol use disorder <sup>b</sup>	16.0 (10.9, 22.8)	14.3 (9.5, 20.6)	0.85 (0.39, 1.87)
Mental wellness <sup>b</sup>	34.8 (29.0, 41.1)	46.0 (39.8, 52.4)	1.65 (1.10, 2.49)
Physical activity <sup>b</sup>	38.7 (32.5, 45.4)	48.5 (41.3, 55.8)	1.57 (1.06, 2.32)
Homelessness risk <sup>b</sup>	39.7 (32.9, 46.9)	26.6 (20.9, 33.1)	0.52 (0.33, 0.83)
Working for pay <sup>b</sup>	21.9 (17.8, 26.6)	23.7 (17.9, 30.5)	1.13 (0.74, 1.73)
Any missed work day in last 30 d if working <sup>b,c</sup>	61.8 (46.3, 75.4)	57.7 (46.2, 68.5)	0.82 (0.35, 1.94)
≥ 4 life stressors <sup>b,d</sup>	35.2 (29.9, 40.9)	28.1 (22.1, 34.8)	0.69 (0.49, 0.99)
<b>12-mo follow-up (n = 593)</b>			
Depression symptoms, PHQ-9	12.4 (11.4, 13.4)	11.8 (11.0, 12.7)	-0.61 (-1.70, 0.49)
Total no. life stressors	2.7 (2.2, 3.1)	2.5 (2.2, 2.8)	-0.20 (-0.65, 0.25)
Financial difficulties	1.6 (1.4, 1.9)	1.5 (1.3, 1.7)	-0.11 (-0.40, 0.18)
Relationship problems	0.5 (0.4, 0.7)	0.5 (0.4, 0.6)	-0.02 (-0.15, 0.11)
Loss and trauma	0.5 (0.4, 0.6)	0.4 (0.3, 0.5)	-0.10 (-0.24, 0.03)
No. structure barriers	1.6 (1.3, 1.9)	1.2 (1.0, 1.4)	-0.38 (-0.72, -0.04)
No. logistic barriers	1.0 (0.8, 1.2)	0.8 (0.7, 1.0)	-0.21 (-0.41, -0.01)
Depression self-efficacy <sup>a</sup>	6.1 (5.8, 6.5)	6.7 (6.3, 7.1)	0.56 (0.09, 1.04)
Poor mental health QOL MCS-12 ≤ 40	53.9 (47.6, 60.2)	45.0 (37.7, 52.5)	0.69 (0.48, 0.99)
Hazardous drinker or alcohol use disorder <sup>b</sup>	14.7 (10.2, 20.5)	16.0 (10.7, 23.1)	1.11 (0.65, 1.91)
Mental wellness <sup>b</sup>	43.7 (36.3, 51.3)	47.2 (39.1, 55.5)	1.17 (0.72, 1.90)
Physical activity <sup>b</sup>	45.5 (38.2, 52.9)	43.8 (36.7, 51.1)	0.93 (0.64, 1.35)
Homelessness risk <sup>b</sup>	30.3 (23.4, 38.3)	33.1 (26.2, 40.8)	1.15 (0.73, 1.80)

*Continued*

to imputation and weighting. We compared results from the final model—using weighted and imputed data adjusted for baseline variables, covariates, and clustering—with results from (1) an unadjusted model using available data without imputation and weighting and (2) an adjusted model accounting for baseline

dependent variables and covariates and clustering using unweighted raw data without imputation. Final fully adjusted models reported in our results were robust, as these models produced qualitatively similar results. See the online Appendix for a detailed description.

## RESULTS

Table 1 describes the baseline characteristics of women in our sample. At baseline, the sample included 595 women, of whom 45.1% were Latinas, 45.4% African Americans, 7.1% non-Hispanic Whites, and 2.4% of other ethnic groups. Women averaged 45 years old (SD = 13); 24.4% were married or living with a partner, and nearly half had less than a high school education. Three quarters of the women had incomes under the federal poverty level, with 73% reporting a family income of \$10 000 or less in the year prior to baseline. Nearly half (46.6%) had no health insurance or were either homeless or had multiple risk factors for homelessness (48.6%). Only 20.8% were working for pay, and among those employed, 61.7% reported missed working days in the last 30 days. We found no differences regarding demographic and socioeconomic variables, mental health, functioning, life difficulties, or depression self-efficacy across the CEP and RS arms.

At baseline, 57.9% had probable depressive disorder and 30.5% had alcohol or illicit drug use (both in the past 12 months), and 54.2% had 3 or more current chronic conditions. A total of 51.8% reported poor mental health quality of life, with women on average scoring as moderately depressed (mean PHQ-8 = 14.8; SD = 4.1).

### Intervention Effects on Clinical and Social Outcomes

Table 2 describes intervention effects for female clients' health, functional, and social outcomes at 6- and 12-month follow-up. Intervention effects (CEP vs RS) were not significant for depression symptoms or alcohol use at either 6 or 12 months. However, at 6 months, statistically significant intervention effects were found for poor mental health quality of life, mental wellness, physical activity, homelessness risk, life stressors, and financial difficulties. At 12 months, statistically significant intervention effects were found for poor mental health quality of life, likelihood of missed worked days among working women, barriers to care, and depression self-efficacy. Specifically, at 6 months, relative to RS, CEP reduced the odds of poor mental health quality of life (12-item Mental Health Component

TABLE 2—Continued

Variable	RS Estimate, Mean or % (95% CI)	CEP Estimate, Mean or % (95% CI)	Between-Group Difference or OR (95% CI)
Working for pay <sup>b</sup>	22.6 (17.5, 28.6)	19.4 (14.9, 24.8)	0.79 (0.48, 1.30)
Any missed work day in last 30 d if working <sup>b,c</sup>	65.0 (49.7, 77.9)	44.2 (28.9, 60.7)	0.38 (0.15, 0.95)
≥4 life stressors <sup>b,d</sup>	31.7 (24.7, 39.6)	25.1 (19.2, 32.1)	0.70 (0.44, 1.10)

Note. CEP = Community Engagement and Planning; CI = confidence interval; MCS-12 = 12-item Mental Health Component Summary Score; OR = odds ratio; PHQ-9 = 9-item Patient Health Questionnaire; QOL = quality of life; RS = Resources for Services, or individual program technical assistance. Adjusted analyses used multiply imputed data, weighted for eligible sample for enrollment; linear regression models for continuous variables and logistic regression models for binary variables adjusted for baseline status of the dependent variable, community, age, education, race/ethnicity, and 12-month depressive disorder, and accounted for the design effect of the cluster randomization.

<sup>a</sup>Six-month self-efficacy was assessed with 1 item: client's ability to overcome depression (score ranged from 0 = not at all confident to 10 = extremely confident).

<sup>b</sup>Column estimates show percentages and corresponding OR.

<sup>c</sup>n = 137 at 6 months, n = 126 at 12 months.

<sup>d</sup>Median cutpoint for baseline variable.

Summary Score ≤ 40; odds ratio [OR] = 0.62; 95% confidence interval [CI] = 0.43, 0.88), homelessness risk (OR = 0.52; 95% CI = 0.33, 0.83), having 4 or more life stressors (OR = 0.69; 95% CI = 0.49, 0.99), and number of financial difficulties (group difference = -0.27; 95% CI = -0.054, -0.01). CEP increased the odds of mental wellness (OR = 1.65; 95% CI = 1.10, 2.49) and physical activity (OR = 1.57; 95% CI = 1.06, 2.32). At 12 months, CEP reduced the odds of poor mental health quality of life (OR = 0.69; 95% CI = 0.48, 0.99) and the likelihood of any missed work days among those employed (OR = 0.3; 95% CI = 0.15, 0.95). In addition, relative to RS, CEP reduced the number of structural barriers (group difference = -0.38; 95% CI = -0.72, -0.04) and logistical barriers (group difference = -0.21; 95% CI = -0.41, -0.01), and increased depression self-efficacy (group difference = 0.56; 95% CI = 0.09, 1.04) at 12 months.

### Intervention Effects in Service Utilization

Table 3 describes intervention effects on service utilization variables at 6- and 12-months follow-up for women. For service use outcomes, for CEP relative to RS, significant intervention effects were found at 6 months only for outpatient substance abuse (incidence rate ratio [IRR] = 3.21; 95% CI = 1.10, 9.34) and faith-based visits for

depression (IRR = 2.65; 95% CI = 1.21, 5.82). We found no statistically significant differences between intervention groups for other service sectors or for 12-month follow-up.

### DISCUSSION

CPIC is one of the first studies to use a community-based participatory research approach to conduct a randomized study of alternative approaches to disseminate depression QI in underresourced communities,<sup>46</sup> offering insight into strategies to support improved outcomes for depressed ethnic minority women. Our secondary analyses of intervention effects for women confirmed similar intervention effects found for the whole sample (improved mental health quality of life, reduction in homelessness risk factors at 6 months); it also confirmed additional enduring effects on functional and socioeconomic outcomes for women at 12 months relative to findings for the entire sample.<sup>16,17</sup> Although CEP relative to RS did not improve depression symptoms, there were gains for women in mental health-related quality of life, mental wellness, physical activity, and in reductions in life stressors, financial difficulties, and missed work days. We also found significant intervention differences on several potential explanatory factors such as depression-related self-efficacy as

well as logistical and structural barriers to care (e.g., being able to get an appointment, having someone speak your language at the clinic) by 12 months. These effects were not found at 6 months, suggesting that service system improvements may require time to translate into reduction in barriers to care and depression-related self-efficacy.

Consistent with findings for the overall sample, CEP relative to RS shifted depression care toward use of community settings, increasing visits for depression care to substance abuse, faith-based, and park settings by 6 months. The increase in substance abuse visits under CEP is noteworthy given that 30.5% of women had comorbid substance use. However, the benefits of shifting depression care to community-based settings may have been limited by the resource constraints to implement intensive evidence-based QI components, such as electronic outcome tracking systems and licensed care managers.<sup>47,48</sup> Community sectors may have offered other alternatives through nonlicensed staff; therefore, it may be important to strengthen depression treatment access and individual-level support to providers to achieve a greater effect on depression outcomes.

This study has important limitations, including its focus on 2 Los Angeles communities; reliance on self-report measures, some of which are not empirically validated; lack of clinical diagnoses of depression; small sample size for subanalyses involving low-occurrence characteristics (e.g., lost work days, because of the small number of employed in our sample); and lack of a usual-care comparison group. In addition, the subanalyses were inherently exploratory in nature, useful for informing directions for future research.

Despite these limitations, our analyses suggest that, compared with more standard technical assistance, CEP was successful at implementing depression QI in low-resource minority settings; it also led to a broad range of improvements for women, such as resiliency, employment, less risk of homelessness, and other factors that could result in markedly better quality of life, services access, and social risk disparities. The benefits of CEP are particularly significant given the challenges of engaging the most vulnerable low-income women (i.e., ethnic minority women with average incomes of less than \$10 000, homelessness risk, or more than 3 chronic

**TABLE 3—Clients’ Service Utilization at 6-Month and 12-Month Follow-Up, by Intervention Status: Community Partners in Care, Women’s Substudy, Los Angeles, CA, 2010–2012**

Variable	RS Estimate, Mean or % (95% CI)	CEP Estimate, Mean or % (95% CI)	IRR or OR (95% CI)
<b>6-mo follow-up (n = 595)</b>			
No. hospital nights for alcohol, drugs, mental health	0.6 (0.2, 1.6)	1.3 (0.3, 5.2)	1.93 (0.46, 8.17)
No. PC visits with depression service	1.0 (0.7, 1.4)	1.1 (0.8, 1.5)	1.12 (0.75, 1.66)
No. MH outpatient visits	9.9 (6.8, 14.5)	9.1 (6.3, 13.0)	0.92 (0.49, 1.71)
No. outpatient SA visits for depression	1.3 (0.5, 3.4)	4.3 (2.1, 8.6)	3.21 (1.10, 9.34)
No. faith-based visits with depression service	0.4 (0.2, 0.8)	1.1 (0.6, 2.0)	2.65 (1.21, 5.82)
Total outpatient contacts for depression <sup>a</sup>	21.6 (15.3, 30.3)	23.7 (17.2, 32.5)	1.10 (0.67, 1.79)
Any emergency department visits, <sup>c</sup>	41.7 (34.8, 48.9)	39.8 (33.8, 46.1)	0.91 (0.61, 1.38)
≥2 emergency department visits <sup>b,c</sup>	29.1 (22.5, 36.7)	24.3 (18.7, 30.8)	0.76 (0.47, 1.24)
<b>12-mo follow-up (n = 593)</b>			
No. hospital nights for alcohol, drugs, mental health	0.3 (0.1, 0.6)	0.5 (0.2, 1.2)	1.71 (0.58, 5.02)
No. PC visits with depression service	0.8 (0.6, 1.2)	1.0 (0.5, 1.8)	1.19 (0.57, 2.48)
No. MH outpatient visits	6.8 (4.8, 9.7)	5.5 (4.1, 7.4)	0.81 (0.51, 1.28)
No. outpatient SA visits for depression	1.6 (0.5, 4.8)	2.7 (1.1, 6.3)	1.70 (0.51, 5.71)
No. faith-based visits with depression service	0.6 (0.2, 1.8)	0.8 (0.4, 1.5)	1.30 (0.28, 5.90)
Total outpatient contacts for depression <sup>a</sup>	20.1 (14.1, 28.7)	18.6 (13.6, 25.3)	0.92 (0.60, 1.43)
Any emergency department visits, <sup>c</sup>	35.1 (29.9, 40.6)	36.5 (30.3, 43.1)	1.07 (0.75, 1.51)
≥2 emergency department visits <sup>b,c</sup>	26.9 (21.8, 32.6)	21.3 (17.4, 25.8)	0.72 (0.51, 1.02)

Note. CEP = Community Engagement and Planning; CI = confidence interval; IRR = incidence rate ratio; MH = mental health; OR = odds ratio; PC = primary care; RS = Resources for Services, or individual program technical assistance; SA = substance abuse. Adjusted analyses used multiply imputed data, weighted for eligible sample for enrollment; logistic regression models for binary variables (presented as odds ratios) or Poisson regression models for count variables (presented as incidence rate ratios) adjusted for baseline status of the dependent variable, community, age, education, race/ethnicity, and depressive disorder in the past 12 months, and accounted for the design effect of the cluster randomization.

<sup>a</sup>Including emergency department visits for alcohol, drug, and mental health problems, mental health specialty visits with depression services from primary care provider, mental health outpatients, substance abuse, self-help, and social-community services.

<sup>b</sup>Median cutpoint for baseline variable.

<sup>c</sup>Column estimates show percentages and corresponding OR.

conditions) into depression care and improving individual social risk factors associated with poor health outcomes. Activation of informal support systems, task shifting, and the sharing of depression care tasks between health care and community-based agencies may have created a “village” for depression care and provided an opportunity for women to get some depression-informed care in settings they already frequent. The improvements in individual social risk factors, such as reductions in homelessness, may have been the result of the improved capacity of social services agencies to

engage depressed clients or to give more attention to their social concerns within and across health care sectors. The CPIC study results may be relevant to existing policy initiatives such as Medicaid Behavioral Health Homes and Accountable Care Communities, which incentivize health care and community agency partnerships to improve population-based health outcomes. In conclusion, the use of community-based, locally tailored, multisector service partnership strategies, such as those in CEP, can improve quality of life, services access, and social

risk disparities for low-income ethnic minority women. *AJPH*

**CONTRIBUTORS**

V. K. Ngo, C. Sherbourne, B. Chung, L. Tang, K. Wells, and J. Miranda conceptualized and designed the study and revised the article. V. K. Ngo, C. Sherbourne, B. Chung, and L. Tang drafted the article. V. K. Ngo, C. Sherbourne, B. Chung, L. Tang, and K. Wells provided statistical expertise. V. K. Ngo, B. Chung, A. L. Wright, Y. Whittington, K. Wells, and J. Miranda implemented the intervention. All authors analyzed and interpreted the data and approved the final article draft.

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Institutional review board approval was received by RAND.

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