HHS Public Access

Author manuscript

J Am Board Fam Med. Author manuscript; available in PMC 2017 May 01.

Published in final edited form as:

J Am Board Fam Med. 2016 ; 29(3): 325–338. doi:10.3122/jabfm.2016.03.150306.

The impact of community engagement on health, social, and utilization outcomes in depressed impoverished populations: secondary findings from a randomized trial

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Abstract

Background—Disparities in depression care exist among the poor. Community Partners in Care (CPIC) compared a community coalition model with technical assistance to improve depression services in under-resourced communities. We examine impacts on health, social, and utilization outcomes in impoverished and non-poor depressed, and poor subgroups.

Methods—An analysis of clients above (N=268) and below (N=750) the federal-poverty level (FPL), and, among the poor, three non-overlapping subgroups: justice-involved (N=158), homeless not justice-involved (N=298), and other poor (N=294). Matched programs (N=93) from health and community sectors were randomly assigned to community engagement and planning (CEP) or

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Conflict of Interest / Disclosures: None.

Disclaimer: The contents of this article are solely the responsibility of the authors and do not necessarily represent the views of the funders.

resources for services (RS). Outcomes are poor mental-health-quality-of-life and PHQ9 scores (primary) and community-prioritized and utilization outcomes (secondary). Effects were scrutinized using false-discovery-rate-adjusted p-values to account for multiple comparisons.

Results—For the impoverished, CEP and RS clients did not differ in primary outcomes but, CEP over RS improved mental wellness for depressed poor (unadjusted p=0.004) while providing suggestive evidence for other secondary outcomes. Within poor subgroups, evidence favoring CEP was only suggestive, but strongest among justice-involved clients.

Conclusions—A coalition approach to improve outcomes for low-income, particularly justice-involved clients, with depression may offer additional benefits over standard technical assistance programs.

Background

Depression is associated with increased morbidity and physical health comorbidity.[1,2] While prevalence of depressive symptoms is similar across cultural groups[3], ethnic minorities and persons of lower socioeconomic status have worse access to evidence-based care and worse outcomes than white populations.[4,5] Quality improvement (QI) programs for depression in primary care such as the collaborative care model,[6] are effective in minority and low-income communities.[7-16] Miranda *et al.* demonstrated that depression treatments are effective for socioeconomically vulnerable, minority women, [17] while Partners in Care found greater benefits under collaborative care compared to usual care for African Americans and Latinos relative to non-Hispanic whites across five years of follow-up.[16,18] Such interventions are not widely available in safety-net practices, despite calls for implementation in policy sectors.[19] National studies demonstrate persistent racial and ethnic disparities in access to and quality of depression care.[20]

Participatory co-leadership with patient and community stakeholders is recommended for engaging under-resourced communities in improving their health.[21,22] Community Partners in Care (CPIC) found that a Community Engagement and Planning (CEP) intervention cultivating multi-agency networks to implement depression quality improvement interventions across health and community sectors as a community coalition, was more effective at improving mental health quality of life and reducing hospitalizations over 6-12 months, than was Resources for Services (RS), which made expert assistance available to individual agencies.[14,23] This article examines the extent to which effects of CEP over RS for the whole sample, also applied to persons living in poverty and to non-poor participants, and explores intervention effects for specific subgroups of the poor of clinical and policy interest.

CPIC Intervention

Community-Partnered Participatory Research (CPPR) was used to design and implement the CPIC study and guide development of the CEP community-coalition intervention to enhance depression services. Clients were recruited from programs delivering health (mental health, primary care, public health, substance abuse) and/or social and community services (homeless-services, prisoner re-entry, family preservation and faith-based programs,

community centers, hair salons, and exercise clubs).[24] Two implementation interventions were developed by academic and community partners. In CEP, program administrators, providers, and community and academic study leaders used an intervention work group to conduct bi-weekly meetings for 5 months to develop and implement a written plan for engaging groups of providers in training, based on existing QI toolkits (i.e., clinical assessments, medication management, case management, CBT manuals, and patient-education materials) with efforts to build a coalition for depression care.[14] In contrast, RS provided technical assistance by written and on-line resources and a series of 12 "train-the-trainer" webinars, plus primary-care site visits to support toolkit implementation. Relative to RS, CEP increased staff participation in depression training among eligible staff.[25] Over 6 months, relative to RS, CEP reduced the proportion of individuals having poor mental-health quality of life (MHQOL). On secondary outcomes, CEP relative to RS increased physical exercise, reduced risks for homelessness, and reduced behavioral-health hospitalizations,[14] while shifting outpatient visits for depression away from specialty mental-health medication management towards depression services provided at faith-based centers and park-based programs.[23] Over 12 months, there were modest continuing benefits of CEP over RS in terms of a reduced proportion of individuals with poor mental health quality of life and reduced hospital stays for behavioral health, but some findings were sensitive to modeling assumptions in the data analysis.[23] No significant comparative intervention effects were found on depressive symptoms or use of healthcare depression treatments over 6-12 months. CPIC is noted in a Cochrane review[26] as the only study of the added-value of a community coalition intervention to improve health of minority communities over a non-coalition comparator.

This paper examines the extent to which the effects of CEP relative to RS on primary and secondary outcomes are confirmed among poor or non-poor clients and explores effects of CEP over RS within three mutually exclusive subgroups of poor: 1) justice-involved, 2) clients at risk for homelessness, but not justice-involved, and 3) other poor (i.e., neither homeless nor justice-involved). Community leaders requested inclusion of these subgroups during study design. For these analyses, health-policy partners recommended examining mutually exclusive subgroups, focusing first on justice-involved as understudied and policy-relevant; homeless who are non-justice-involved as a distinct group for similar reasons; and other poor to provide findings across all impoverished participants. Subgroup analyses were considered exploratory, to inform future research and potentially, clinical practice. Secondary outcomes explore related social-risk factors, including life-stress events or difficulties, the reduction of which may improve mental-health outcomes.[27] Given the dearth of literature on socially disenfranchised groups, these secondary analyses, albeit exploratory, can provide guidance to the field.

Methods

CPIC, a group-level randomized comparative effectiveness trial, assessed the effectiveness of CEP compared to RS[14] using a CPPR approach[28] that includes community and academic partner co-leads with equal authority in all aspects of research. The Institutional Review Boards of RAND and participating agencies approved procedures. CPIC funding (2007) was prior to inclusion of health services interventions in required clinical trial registration and

not considered a clinical trial by NIH since no experimental treatments were included. The design of the study is described elsewhere.[14,23,24,29]

Sampling

Agencies who serviced at least 15 clients per week, had ≥1 staff-member, and not focused exclusively on psychotic disorders or home services were sampled from two LA communities (South LA, Hollywood Metro) with high minority populations and poverty rates. Within each community, comprehensive lists of services agencies and community partner recommendations were used to identify mental-health, primary care, substance abuse, social services and homeless, and other community agencies. Sixty eligible agencies were offered the opportunity to consent; 133 of 194 programs were potentially eligible. Within each community, programs or clusters were paired based on geographic location, service sector, size, population served, services provided, and funding. One of each pair was randomized to CEP and the other to RS. Following site visits to finalize enrollment, 93 programs from 50 consenting agencies were enrolled.

Within programs, clients were screened in waiting rooms or at events from March to November 2010. Staff blinded to agency intervention status approached 4,645 adults (age ≥18) on 2–3 days per program; 4,440 (95.6%) agreed to screening for depression. Eligibility in the study included clients able to provide contact information and who were depressed (e.g. score ≥10 on 8-item Patient Health Questionnaire (PHQ-8)).[30] Of 4,440 screened, 1,322 (29.8%) are eligible; 1,246 (94.3%) were enrolled. Nine-hundred-eighty-one of enrolled clients completed a baseline telephone survey; 759 and 733 completed six and 12-month follow-up surveys, respectively. The CONSORT flowchart detailing inclusion and exclusion is described elsewhere.[14] The most common reason for exclusion at different waves of follow-up was inability to contact.

Our analytic sample includes 1,018 (81.9% of consented minus deaths) with baseline or follow-up data, of whom 268 lived above and 750 below the federal poverty level. Of 750 poor, we created mutually-exclusive subgroups in order of decreasing social disenfranchisement 1) clients arrested or on probation in the six-months before baseline (N=158), “justice-involved”, 2) clients homeless or with ≥2 risk factors for homelessness, but not arrested or on probation in the six-months prior to baseline (N=298), and 3) remaining clients below FPL (N=294), “other poor”.

Baseline Measures

Baseline measures include age, sex, education, race/ethnicity, current marital and work status, health-insurance coverage, count of chronic-medical conditions, and intervention assignment. Responses from the Mini-International Neuropsychiatric Interview (MINI)[31] were used to create an indicator for 12-month major depression diagnosis. Alcohol abuse or use of illicit drugs were assessed by the 3-item AUDIT[32] and the DAST-10[33] at follow-up.

Outcome Measures: Health & Social

Health Outcomes—For CPIC, the two pre-planned primary mental and physical health outcomes were:

- Poor MHQOL, defined as one standard deviation below the population mean on the 12-item Short Form Health Survey Mental Health Composite (MCS12)[34]
- Reduction of depressive symptoms on the PHQ9[35]

Following stakeholder input, community-prioritized outcomes were developed for mental wellness and good physical health.[10]

Social Outcomes—Community-prioritized social outcomes included current homelessness or living in a shelter or having multiple risk factors for future homelessness (e.g., no place to stay for ≥2 nights in the past six-months or eviction from primary residence, financial crisis or food insecurity in the past six-months). Expanded social factors included report of worry about cost keeping you from getting help for emotional problems, and total number of life difficulties experienced out of 15 (e.g. no place to stay, eviction, witness of violence, lost custody of a child, death of a loved one, worry that food would not last, arrest or on probation, fired or laid-off, reduced work hours, loss of health insurance, financial problems, gave-up trying to find work, arguments with others at work, home or those not living with you).

Service Utilization

Use of health services were evaluated for a six-month period prior to six and 12-month follow-ups by client self-report. Outcomes include formal-healthcare sector utilization: behavioral health hospital nights; any number of mental-health specialty (MHS) outpatient visits, including advice given about medication for emotional or mental health problems like depression, number of visits where counseling was received; and any use of outpatient substance-abuse services, stay in a residential treatment program for substance-abuse problems; and any use of outpatient primary-care or public-health clinics (PCP). The number of informal-sectors visits (social services, religious, parks, hotline, other, but not including mental-health self-help) where clients report receiving help for depression or emotional problems was also included. Finally, the total number of outpatient contacts for depression in all sectors (formal and informal) was included.

Statistical Methods

Our analytic sample has 1,018 individuals who completed ≥1 survey at baseline, six or 12-months. We use item-level imputation for missing data and wave-level imputation for missing surveys to adjust findings to the observed analytic sample. We use weights to account for non-enrollment among eligible clients and attrition[14]. All analyses, conducted using SUDAAN Version 11.0.1 (http://www.rti.org/sudaan/), account for clustering (clients within programs)[36], weighting, and multiple imputations[37].

We estimated two models using linear regression for continuous, logistic for binary or Poisson for count outcome variables. Model 1 used the total sample (N=1,018) and estimated a poverty-by-intervention (CEP relative to RS) interaction model adjusted for age, education, race/ethnicity, 12-month depressive disorder, community, and baseline status of each outcome. Model 2 was fit to the subset of those in poverty (N=750) and included indicators for justice-involved, homeless but not justice involved, and other poor, each

interacted with intervention status using the same set of predictors. Comparisons focused on the effects of interventions within subgroups (above or below the FPL, and the three non-overlapping subgroups among those below the FPL).

Viewing our analyses as encompassing aspects of what Benjamini and Yekutieli[38] describe as a problem in subgroup analysis in the comparison of two conditions and a problem involving multiple endpoints, we build on the false-discovery-rate (FDR) framework of Benjamini and Hochberg[39] as extended by Yekutieli and Benjamini[40] and use FDR-adjusted p-values in interpreting results across a large number of regression analyses. [38-40] FDR assesses whether the number of results with a significant-looking unadjusted p-value (i.e. without multiple comparison adjustment) is disproportionate to what would be expected due to chance variation; the FDR-adjusted p-value (pFDR) can be interpreted as the threshold FDR value below which the particular null hypothesis in question would be rejected. Results with pFDR <0.05, which adjusts for multiple comparisons, are viewed as convincing evidence of a difference; consistent with rationales for adapting the interpretation of significance findings to contextual factors such as the nature of the intervention and the size of the sample[41] higher alternative pFDR thresholds are considered within a sensitivity-analysis framework as signaling suggestive evidence.

To broaden our understanding of patterns we report Cohen's effect sizes (ES).[42,43] We reflect ES through standardized predictions by intervention and subgroups generated from fitted regression models.[44] We also provide between-group differences (difference), odds ratios (OR) or incidence rate ratios (IRR) with 95% confidence intervals. For continuously scaled variables, ES are estimated as the difference between two adjusted intervention group means divided by a pooled standard deviation from a random-effects model accounting for the cluster-randomized design.[45] For dichotomous outcomes, we provide Cohen's effect size index h, defined as the difference between two arcsine-transformed proportions,[43] where h=0.20, 0.50, 0.80 are used to reflect small, medium and large ES, respectively.

Results

Baseline and demographic characteristics for CEP and RS are similar for those above and below the FPL. Those in poverty relative to the non-poor had a higher percentage of unmarried, less education above high school, work for pay, and health insurance (Table 1). Within each poor socially disenfranchised subgroup, baseline demographic and clinical characteristics were similar for CEP and RS arms. The justice-involved were more likely than the other subgroups to be male, not working for pay, not have health insurance, and have more total life events, and to have misused any drugs in the past 6 months. Other differences between groups are shown in Table 2.

Model 1

There are no significant intervention differences in primary outcomes (percentage of clients with poor MHQOL or PHQ9 scores) among the non-poor or poor (Table 3). Regarding community-prioritized outcomes, among the poor, CEP over RS improved mental wellness at six-months (p=0.004, pFDR=0.027, ES=0.27) with suggestive evidence of better physical health at 12-months (p=0.019, pFDR=0.115, ES=0.20) (Table 3). Regarding other secondary

outcomes, there was suggestive evidence for reduced worry about cost of mental-health services under CEP relative to RS at 12-months (p=0.033, pFDR=0.115, ES=0.19). The percentage of clients hospitalized for behavioral health or with any mental-health outpatient visits did not differ significantly by intervention status for clients in poverty, nor did the percentage with any outpatient or residential substance-abuse services (Table 4). There was suggestive evidence for reduced number of mental-health-specialty medication visits at six-months for CEP over RS, among the poor (p=0.006, pFDR=0.059, ES=0.30). At 12-months PCP visits increased under CEP relative to RS for the poor (p=0.004, pFDR=0.049, ES 0.23). At six and 12-months, there is suggestive evidence that CEP over RS increased mean depression-specific visits in community-based sectors (six-months: p=0.032, pFDR=0.159, ES=0.15; 12-months: p=0.033, pFDR=0.163, ES=0.14). No significant unadjusted p-value differences by intervention were found within the non-poor sample, and none of the interactions between poverty and intervention status emerged as significant in Model 1.

Model 2

Among subgroups of poor clients, no significant intervention differences were seen in having poor MHQOL or in PHQ9 scores (Table 5). Regarding community-prioritized health outcomes, no significant intervention effects were found among justice-involved clients. CEP relative to RS showed suggestive evidence of improved physical health at 12-months for the homeless not justice-involved (p=0.042, pFDR=0.196, ES=0.27), and of improved mental-wellness at six-months for other poor (p=0.009, pFDR=0.062, ES=0.33). For the justice-involved at six-months, CEP relative to RS showed suggestive evidence of reducing the percentage currently homeless or having multiple homelessness risk factors (p=0.036, pFDR=0.126, ES=0.46); and of reducing total life difficulties (p=0.017, pFDR=0.120, ES=0.44). In an exploratory analysis, there was evidence of an increase in having no place to stay for ≥2 nights in a row in the past six months for 26 of 88 clients in RS (95% CI 15.0, 36.4) versus 13 of 69 clients in CEP (95% CI 5.6, 20.6) (unadjusted p=0.029). Similarly, on the single item asking about arrests or probation in the last six-months there is a substantial difference (unadjusted p=0.046) from an average of 35 of 88 clients in RS (95% CI 20.1, 49.1) to 19 of 69 clients in CEP (95% CI 8.7, 28.9). There are no significant findings for social outcomes within the homeless not justice-involved, or other poor subgroups. Regarding utilization outcomes, the percent of behavioral health hospitalizations, any mental-health outpatient visits, or any outpatient or inpatient substance-abuse services did not differ significantly by intervention status for subgroups (Table 6). For the justice-involved, CEP showed suggestive evidence of reducing the number of mental-health-specialty medication visits at six-months (p=0.038, pFDR=0.192, ES=0.31); and reduced the number of mental-health counseling visits at six-months (p=0.007, pFDR=0.066, ES=0.48). There are no significant utilization outcomes for the homeless not justice involved. Finally, for the other poor subgroup, CEP showed suggestive evidence of shifts in utilization towards community services, such as increased number of visits in informal sectors in which the client received help for depression or emotional problems at 12-months the (p=0.050, pFDR=0.281, ES=0.21) (Table 6).

Discussion

This paper examines whether CPIC findings regarding effects of community engagement and planning, over and above resources for services for the whole sample, also apply within impoverished clients of interest in under-resourced communities with non-poor as a reference group; and explores effects for low-income subgroups to inform future research. Overall, the pattern of findings suggesting some improved health under CEP over RS apply to the poor in terms of mental wellness but not for primary outcomes of MHQOL and PHQ9; comparable patterns for mental wellness for the non-poor were not significant given modest sample size. This is similar to earlier findings in the Health Insurance Experiment where effects of variation in insurance generosity among low-income groups with poor mental health were for psychological well-being rather than distress.[46] Low-income groups may be more comfortable reporting wellness than distress; or the network-based CEP over the technical assistance-based RS may have specifically enhanced resiliency. Suggestive evidence of increased physical activity under CEP over RS in the poor was also consistent with overall sample findings. Additionally, as a new suggestive secondary finding, CEP reduced worry about costs of mental-health services, which may have been because of more depression training for lower-cost non-licensed providers in CEP over RS.[25]

In exploring intervention effects for specific poor subgroups (e.g. justice-involved, homeless but not justice-involved, other poor), we found no significant effects on pre-planned primary outcomes, but observed suggestive evidence of one or more improved secondary outcomes under CEP over RS for each subgroup: reduced homelessness risk factors and life difficulties for the justice-involved, improved physical health for the homeless not justice-involved, and greater mental wellness for other poor. Of note, under the community-engagement arm relative to RS, fewer justice-involved clients reported having no place to stay, or arrests or probation. For the justice-involved, many of the intervention effect sizes were large even when not statistically significant (e.g., ES=0.41 for mental wellness compared to ES=0.33 in poverty-only and ES=0.14 in homeless not justice-involved). We also found suggestive evidence of reduced mental health specialty visits for medication and counseling in the justice-involved, and of increased community-based depression services in the other poor, each similar to the overall sample. These exploratory findings suggest that it may be important to examine the effects of CEP over RS to improve outcomes for depressed clients in larger samples of poor subgroups, especially the justice-involved. The justice-involved tend to have many social and health risks: they are more likely to be homeless,[47] die of drug overdose, homicide, suicide or accidents post-release,[48,49] and have high levels of chronic medical, mental-health and substance-use problems while in prison.[35] In our sample over 65% of the justice-involved are either currently homeless or had multiple risk factors for homelessness at baseline. Since engaging homeless and justice-involved populations was important for CPIC community and policy partners, several enrolled programs provided homeless and/or prisoner-reentry services. The development of a community-coalition across healthcare and community-based service programs coupled with training in approaches to screen, refer, support coping and deliver services to depressed clients, may have helped program staff alleviate stressors (e.g. food, shelter, clothing) or avoid arrest, for a population (depressed) often difficult to engage in services. This potential

for redirection of therapeutic skills to enhance social services provision was raised by homeless agency staff during training, and noted by community leaders in reviewing study findings. Such “task enhancement” may be an important area for future research on low-income populations.

Our findings have limitations. Only two communities in one large urban area are included and may not generalize to other regions. Interventions were randomized at the program level within the same communities with potential for contamination (clients receiving services from both CEP and RS agencies). This would reflect a conservative bias (under-estimate intervention effects). We are limited by sample size, especially for subgroups. We had multiple secondary outcomes, but attempted to mitigate this challenge by reporting ES and FDR-adjusted p-values along with traditional statistical significance (i.e. unadjusted p-values). The strongest finding yielded pFDR=0.027 for mental-wellness in subjects living below the FPL; many findings considered as suggestive evidence depended on relaxing the pFDR threshold to 0.10-0.20. We did not have data on important factors such as chronicity of homelessness, type of criminal offenses, medical-home enrollment, and severity of medical illnesses. Data are based on self-report. Future research is needed with increased sample-sizes, diverse geographic populations, randomization of whole communities to minimize contamination, and in the context of long-term outcomes for systems and clients. The results concern the added-value of a community-engaged approach over technical assistance to support agencies in depression QI, not the value of treatment or services delivery per se. In this context, one may expect small ES and it may be surprising that we observed some sizeable differences.

The increase in insurance coverage for lower-income populations through the Affordable Care Act provides an opportunity to incentivize community-health homes, including for behavioral health[50] with potential to reduce disparities in access and quality of care. Our findings suggest potential areas for future research on coalition approaches to improve outcome for low-income and particularly justice-involved clients with depression. The burden of depression in impoverished and vulnerable persons and its collateral impacts on communities underscore the need to understand how best to mobilize limited public health and social resources. CEP offers an approach over more standard technical assistance to implement depression QI while addressing known disparities in care and outcomes for low-income depressed clients through healthcare-community partnerships. Recently, the study approach and findings helped provide an evidence foundation for a services model in LA County's Health Neighborhood initiative, which promotes services coordination, quality and early intervention in mental health.[51] Given multiple health and social needs of vulnerable, low-income clients in under-resourced communities, even modest gains across health and/or social indicators can signal important improvements from coalition efforts.

Acknowledgments

Funding: Support for these analyses of Community Partners in Care data are from National Institute on Minority Health and Health Disparities R01MH078853 and Award Number 1845 from the Patient-Centered Outcomes Research Institute; the parent study was funded by Award Numbers R01MH078853, P30MH082760, and P30MH068639 from the National Institute of Mental Health, 64244 from the Robert Wood Johnson Foundation, CMCH-12-97088 from the California Community Foundation, G08LM011058 from the National Library of

Medicine, and UL1TR000124 from the NIH/National Center For Advancing Translational Science UCLA CTSI. Dr. Lam is supported by the VA Quality Scholars program.

We thank Dr. Mitchell H. Katz, Dr. David A. Ganz and Susan Hirsch for their careful reading and editorial comments on this manuscript.

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Table 1
Baseline Characteristics of Depressed Clients by Family Income Status

	Overall (N=1018)	Not Below the Federal Poverty Line (N=268)	Below the Federal Poverty Line (N=750)	p
Age, years (mean ± SD)	45.8 ± 12.9	46.6 ± 13.7	45.4 ± 12.5	0.36
Female, n (%)	595 (57.0)	150 (54.7)	445 (57.9)	0.48
Race/Ethnicity, n (%)				0.93
Latino	409 (41.0)	107 (40.8)	302 (41.1)	
African American	488 (46.0)	127 (45.2)	361 (46.2)	
Non-Hispanic white	86 (9.2)	25 (10.3)	61 (8.9)	
Other	35 (3.8)	8 (3.6)	27 (3.9)	
Married or living with partner, n (%)	231 (22.6)	82 (30.3)	149 (19.8)	<0.01
Less than high school, n (%)	446 (43.6)	94 (35.2)	352 (46.6)	<0.01
Working for pay, n (%)	205 (20.0)	91 (33.5)	114 (15.1)	<0.01
12-month depressive disorder, n (%)	629 (61.9)	159 (59.1)	470 (62.9)	0.33
PHQ-8, (mean ± SD)	15.0 ± 4.1	14.7 ± 4.2	15.1 ± 4.1	0.31
Poor mental health-related quality of life, n (%)	546 (53.2)	146 (55.2)	400 (52.5)	0.49
Mental wellness, n (%)	407 (39.7)	107 (39.3)	300 (39.8)	0.87
Good physical health, n (%)	759 (74.3)	210 (77.7)	548 (73.0)	0.12
Chronic health conditions >=3, n (%)	548 (54.7)	151 (57.9)	397 (53.6)	0.31
No health insurance, n (%)	545 (54.1)	121 (45.2)	424 (57.3)	<0.01
Life difficulties total score of 15 (mean ± SD)	4.1 ± 2.8	4.2 ± 2.8	4.0 ± 2.7	0.56
Hazardous drinker or alcohol use disorder, n (%)	248 (24.5)	66 (24.2)	182 (24.6)	0.91
Misused any drugs past 6 months, n (%)	357 (35.3)	86 (32.6)	271 (36.2)	0.41
Justice involved, n (%)	201 (19.6)	43 (16.2)	158 (20.9)	0.10
Homeless or >=2 risk for homelessness, n (%)	538 (54.1)	136 (50.7)	403 (55.3)	0.25

Table 2

Baseline Characteristics of Depressed Clients Whose Family Income is Under the Federal Poverty Level (N=750) by Vulnerable Subgroups

	Justice-Involved Subgroup (1) (N=158)	Homeless not justice-involved Subgroup (2) (N=298)	Other poor Subgroup (3) (N=294)	Pairwise comparison p value			Group test		
	n (%) or mean (SD)	n (%) or mean (SD)	n (%) or mean (SD)	(1) vs. (2)	(1) vs. (3)	(2) vs. (3)	X^2	df	p
Age, years (mean ± SD)	43.0 ± 10.6	45.5 ± 11.7	46.7 ± 14.1	.074	.014	.355	6.4	2	.041
Female, n (%)	65 (39.6)	174 (56.8)	206 (69.1)	<.001	<.001	.009	23.0	2	<.001
Race/Ethnicity, n (%)				.301	<.001	.048	17.6	6	.007
Latino	44 (28.3)	111 (38.0)	147 (51.4)						
African American	88 (53.4)	148 (47.9)	125 (40.5)						
Non-Hispanic white	17 (12.0)	29 (10.4)	15 (5.4)						
Other	9 (6.3)	10 (3.7)	8 (2.7)						
Married or living with partner, n (%)	25 (16.0)	51 (16.7)	74 (25.4)	.845	.039	.010	8.3	2	.016
Less than high school, n (%)	65 (40.8)	129 (42.2)	157 (54.5)	.795	.007	.003	13.0	2	.002
Working for pay, n (%)	12 (7.4)	60 (19.6)	42 (14.6)	.001	.035	.164	10.9	2	.004
12-month depressive disorder, n (%)	106 (67.5)	201 (68.0)	163 (54.9)	.911	.008	.004	9.9	2	.007
PHQ-8, (mean ± SD)	15.2 ± 4.3	15.4 ± 4.0	14.6 ± 3.9	.715	.195	.056	3.9	2	.144
Poor mental health-related quality of life, n (%)	77 (48.8)	167 (54.6)	156 (52.3)	.311	.507	.610	1.0	2	.599
Mental wellness, n (%)	68 (43.5)	108 (35.7)	124 (42.3)	.164	.816	.181	2.3	2	.311
Good physical health, n (%)	118 (74.5)	218 (73.3)	212 (71.9)	.854	.682	.742	0.2	2	.898
Chronic health conditions >=3, n (%)	82 (53.1)	166 (56.0)	149 (51.3)	.609	.769	.341	0.9	2	.630
No health insurance, n (%)	116 (73.5)	186 (63.1)	123 (42.1)	.091	<.001	<.001	24.7	2	<.001
Life difficulties total score of 15 (mean ± SD)	5.9 ± 3.1	5.0 ± 2.2	2.0 ± 1.6	.006	<.001	<.001	582.3	2	<.001
Hazardous drinker or alcohol use disorder, n (%)	49 (31.9)	82 (27.7)	51 (17.2)	.392	.003	.004	11.1	2	.004
Misused any drugs past 6 months, n (%)	97 (61.5)	111 (37.3)	63 (21.2)	<.001	<.001	<.001	42.1	2	<.001

J Am Board Fam Med. Author manuscript; available in PMC 2017 May 01.

Table 3

Health and Social Outcomes By Poverty Status and Intervention Assignment (Model 1)

	Not Below the Federal Poverty Line (N=268)				Below the Federal Poverty Line (N=750)			
	RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS	
	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES
Poor MHQOL			OR				OR	
6-month follow-up (%)	51.4 (4.4)	37.0 (4.7)	0.5 (0.3, 1.1)	.29	51.6 (3.0)	46.5 (2.5)	0.8 (0.6, 1.1)	.10
12-month follow-up (%)	45.3 (4.9)	42.4 (5.8)	0.9 (0.5, 1.6)	.06	52.2 (3.0)	45.7 (3.2)	0.8 (0.6, 1.1)	.13
PHQ-9 standard score			Difference				Difference	
6-month follow-up (mean)	12.1 (0.8)	11.8 (0.7)	-0.2 (-2.6, 2.2)	.04	13.1 (0.5)	12.7 (0.5)	-0.4 (-2.3, 1.4)	.06
12-month follow-up (mean)	10.9 (0.9)	10.9 (0.8)	0.0 (-2.2, 2.3)	.00	12.4 (0.4)	12.1 (0.4)	-0.3 (-1.5, 0.9)	.04
Mental wellness			OR				OR	
6-month follow-up (%)	40.1 (4.9)	49.0 (6.5)	1.5 (0.6, 3.4)	.18	31.6 (3.0)	44.6 (2.6)	1.8 (1.2, 2.7) **	.27
12-month follow-up (%)	54.7 (5.7)	51.0 (4.3)	0.9 (0.5, 1.6)	.07	44.8 (3.6)	48.2 (3.4)	1.2 (0.7, 1.8)	.07
Good physical health				.				.
6-month follow-up (%)	78.1 (4.3)	80.2 (3.9)	1.2 (0.5, 2.5)	.05	73.5 (2.8)	76.4 (2.2)	1.2 (0.8, 1.7)	.07
12-month follow-up (%)	78.0 (4.2)	77.4 (3.8)	1.0 (0.5, 1.9)	.01	69.6 (3.5)	78.4 (2.8)	1.6 (1.1, 2.4) *	.20
Homeless/risk				.				
6-month follow-up (%)	38.1 (6.6)	27.9 (4.8)	0.6 (0.3, 1.2)	.22	40.3 (3.4)	30.3 (3.1)	0.6 (0.4, 1.0)	.21
12-month follow-up (%)	25.7 (4.1)	31.0 (5.3)	1.3 (0.7, 2.5)	.12	33.8 (3.6)	35.7 (3.5)	1.1 (0.8, 1.6)	.04
Worried about cost								
6-month follow-up (%)	29.5 (4.5)	32.2 (5.8)	1.1 (0.5, 2.7)	.06	33.0 (2.7)	29.6 (2.6)	0.9 (0.6, 1.2)	.07
12-month follow-up (%)	28.7 (4.8)	30.1 (4.6)	1.1 (0.6, 2.0)	.03	32.6 (2.6)	24.0 (3.2)	0.6 (0.4, 1.0) *	.19

	Not Below the Federal Poverty Line (N=268)				Below the Federal Poverty Line (N=750)			
	RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS	
	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES
Life difficulties total score out of 15			Difference				Difference	
6-month follow-up (mean)	3.0 (0.3)	2.7 (0.3)	-0.3 (-1.0, 0.5)	.12	3.0 (0.2)	2.7 (0.1)	-0.3 (-0.7, 0.2)	.12
12-month follow-up (mean)	2.6 (0.2)	2.4 (0.2)	-0.2 (-0.9, 0.4)	.09	2.8 (0.2)	2.6 (0.2)	-0.2 (-0.5, 0.2)	.09

Note: Intervention-by-poverty status interaction models used multiple imputed data, weighted for eligible sample for enrollment and accounted for the design effect of the cluster randomization. A linear regression model was used for a continuous variable (presented as between-group difference) or a logistic regression model for a binary variable (presented as odds ratio, OR), adjusted for baseline status of the dependent variable, age, education, race/ethnicity, 12-month depressive disorder and community and accounted for the design effect of the cluster randomization; no significant interactions of intervention-by poverty status were found for all outcome variables.

MHQOL, mental health quality of life; RS, resource for services; CEP, community engagement and planning; SE, standard error; CI, 95% confidence interval; ES, standardized effect size.

** p value < 0.01;

* p value < 0.05.

J Am Board Fam Med. Author manuscript; available in PMC 2017 May 01.

Table 4

Service Utilization By Poverty Status and Intervention Assignment (Model 1)

	Not Below the Federal Poverty Line (N=268)				Below the Federal Poverty Line (N=750)			
	RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS	
	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES
Behavioral health hospital nights			OR				OR	
6-month follow-up (%)	10.9 (4.0)	5.4 (2.6)	0.5 (0.2, 1.3)	.20	10.4 (2.2)	5.9 (1.6)	0.5 (0.3, 1.1)	0.17
12-month follow-up (%)	5.0 (1.9)	3.9 (1.5)	0.8 (0.2, 2.4)	.05	5.1 (1.2)	4.5 (1.0)	0.9 (0.4, 1.7)	0.03
Any MHS outpatient visits								
6-month follow-up (%)	50.3 (6.7)	51.0 (5.4)	1.0 (0.5, 2.0)	.01	55.4 (3.4)	54.4 (3.6)	0.9 (0.6, 1.6)	0.02
12-month follow-up (%)	44.4 (6.1)	40.3 (6.0)	0.8 (0.3, 2.1)	.08	44.5 (3.8)	43.4 (3.8)	0.9 (0.6, 1.5)	0.02
# MHS outpatient visits			IRR				IRR	
6-month follow-up (mean)	7.5 (2.6)	8.0 (1.7)	1.1 (0.5, 2.5)	.03	11.7 (2.4)	8.0 (1.3)	0.7 (0.4, 1.3)	0.15
12-month follow-up (mean)	5.5 (1.9)	4.7 (1.2)	0.9 (0.4, 1.9)	.06	6.0 (1.0)	4.8 (0.5)	0.8 (0.5, 1.2)	0.09
# MHS outpatient visits received advice for medication if visited								
6-month follow-up (mean)	7.0 (3.3)	5.3 (0.8)	0.8 (0.3, 2.2)	.11	12.2 (2.8)	5.2 (0.5)	0.4 (0.2, 0.7)**	0.30
12-month follow-up (mean)	6.4 (2.5)	8.2 (2.0)	1.3 (0.5, 3.4)	.12	6.0 (1.0)	6.1 (0.8)	1.0 (0.6, 1.6)	0.01
# MHS outpatient visits received counseling if visited								
6-month follow-up (mean)	10.5 (3.6)	10.7 (1.9)	1.0 (0.5, 2.3)	.01	17.3 (3.3)	10.7 (1.4)	0.6 (0.3, 1.2)	0.24
12-month follow-up (mean)	9.3 (2.6)	10.3 (2.4)	1.1 (0.5, 2.3)	.06	8.9 (1.3)	7.7 (0.8)	0.9 (0.6, 1.3)	0.10
Any outpatient substance abuse service or self-help group			OR				OR	
6-month follow-up (%)	22.3 (3.9)	28.3 (5.5)	1.5 (0.6, 3.6)	.14	28.0 (4.3)	30.6 (3.7)	1.2 (0.7, 2.1)	0.06
12-month follow-up (%)	13.7 (3.2)	18.4 (3.6)	1.5 (0.7, 3.3)	.13	18.6 (3.0)	20.5 (3.3)	1.1 (0.6, 2.3)	0.05
Stayed in residential treatment for substance abuse problem								

	Not Below the Federal Poverty Line (N=268)				Below the Federal Poverty Line (N=750)			
	RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS	
	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES
6-month follow-up (%)	12.8 (4.1)	12.4 (4.1)	1.0 (0.4, 2.6)	.01	12.8 (3.5)	15.1 (3.7)	1.3 (0.6, 2.6)	0.07
12-month follow-up (%)	5.2 (2.4)	3.8 (2.8)	0.6 (0.0, 11.6)	.07	7.4 (1.9)	5.9 (2.0)	0.8 (0.3, 1.9)	0.06
Visited primary care								
6-month follow-up (%)	73.0 (3.9)	67.5 (5.6)	0.8 (0.4, 1.5)	.12	66.7 (3.5)	67.8 (3.6)	1.1 (0.7, 1.6)	0.02
12-month follow-up (%)	71.1 (4.9)	68.6 (4.7)	0.9 (0.4, 1.8)	.05	61.1 (2.7)	71.7 (2.7)	1.7 (1.2, 2.4) **	0.23
# visits in community (informal) sector for depression								
6-month follow-up (mean)	3.7 (1.7)	3.0 (1.5)	0.8 (0.2, 3.0)	.04	2.2 (0.5)	4.4 (1.0)	2.0 (1.1, 3.9) *	0.15
12-month follow-up (mean)	2.5 (1.0)	2.5 (1.5)	0.9 (0.3, 3.6)	.00	1.7 (0.4)	3.9 (1.2)	2.3 (1.1, 5.1) *	0.14
# outpatient contacts for depression all sectors								
6-month follow-up (mean)	16.4 (3.8)	19.8 (4.8)	1.2 (0.6, 2.3)	.09	25.0 (4.8)	22.6 (3.1)	0.9 (0.5, 1.6)	0.05
12-month follow-up (mean)	14.7 (4.9)	14.6 (3.9)	1.0 (0.4, 2.2)	.00	19.8 (2.8)	18.0 (2.6)	0.9 (0.6, 1.3)	0.04

Note: Intervention-by-poverty status interaction models used multiple imputed data, weighted for eligible sample for enrollment and accounted for the design effect of the cluster randomization. A logistic regression model was used for a binary variable (presented as odds ratio, OR) or a Poisson regression model for a count variables (presented as incidence rate ratios, IRR), adjusted for baseline status of the dependent variable, age, education, race/ethnicity, 12-month depressive disorder and community, and accounted for the design effect of the cluster randomization; no significant interactions of intervention by poverty status were found for all outcome variables.

MHS, mental health service; RS, resource for services; CEP, community engagement and planning; SE, standard error; CI, 95% confidence interval; ES, standardized effect size.

** p value < 0.01;

* p value < 0.05

Table 5

Health and Social Outcomes by Intervention Assignment Among Mutually Exclusive Client Subgroups Below the Federal Poverty Line (Model 2)

	Justice involved (N=158)				Homeless not justice involved (N=298)				Other Poor (N=294)			
	RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS	
	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES
Poor MHQOL			OR				OR				OR	
6-month follow-up (%)	50.1 (5.3)	38.0 (5.7)	0.6 (0.3, 1.2)	.24	55.6 (5.8)	49.4 (4.8)	0.8 (0.4, 1.5)	.12	47.9 (4.4)	47.6 (3.7)	1.0 (0.6, 1.5)	.00
12-month follow-up (%)	50.6 (8.0)	40.9 (7.9)	0.7 (0.3, 1.8)	.19	55.3 (4.4)	48.1 (4.6)	0.7 (0.5, 1.2)	.14	50.2 (4.8)	45.8 (5.4)	0.8 (0.5, 1.4)	.09
PHQ-9 standard score			Difference				Difference				Difference	
6-month follow-up (mean)	13.0 (1.0)	13.0 (0.9)	0.0 (-2.9, 2.9)	.00	13.7 (0.6)	12.8 (0.7)	-0.9 (-2.7, 1.0)	.13	12.5 (0.8)	12.5 (0.7)	0.0 (-2.5, 2.4)	.00
12-month follow-up (mean)	11.8 (0.9)	11.5 (1.2)	-0.3 (-2.6, 2.1)	.04	12.7 (0.6)	12.1 (0.6)	-0.6 (-2.2, 1.0)	.09	12.5 (0.8)	12.6 (0.6)	0.0 (-1.9, 1.9)	.00
Mental wellness			OR				OR				OR	
6-month follow-up (%)	31.0 (6.4)	50.8 (6.7)	2.5 (0.9, 6.9)	.41	33.4 (4.7)	40.3 (4.2)	1.4 (0.7, 2.7)	.14	29.6 (4.1)	45.7 (4.3)	2.1 (1.2, 3.7) **	.33
12-month follow-up (%)	51.8 (8.3)	58.4 (6.8)	1.3 (0.4, 4.1)	.13	40.1 (5.0)	48.9 (6.1)	1.5 (0.7, 3.0)	.18	46.1 (5.5)	43.0 (4.5)	0.9 (0.5, 1.6)	.06
Good physical health												
6-month follow-up (%)	74.2 (5.5)	79.8 (5.5)	1.4 (0.6, 3.5)	.13	73.5 (3.1)	74.0 (4.8)	1.0 (0.6, 1.8)	.01	72.9 (4.4)	76.8 (3.9)	1.2 (0.6, 2.4)	.09
12-month follow-up (%)	73.9 (5.4)	81.8 (7.1)	1.6 (0.5, 4.9)	.19	66.5 (4.0)	78.3 (4.0)	1.9 (1, 3.4) *	.27	70.9 (5.3)	77.0 (3.6)	1.4 (0.8, 2.5)	.14
Homeless/risk												
6-month follow-up (%)	41.9 (7.3)	20.6 (6.4)	0.4 (0.1, 0.9) *	.46	55.1 (4.5)	46.1 (5.9)	0.7 (0.4, 1.3)	.18	24.5 (4.6)	17.9 (3.3)	0.7 (0.4, 1.3)	.16
12-month follow-up (%)	32.2 (8.6)	36.7 (6.6)	1.2 (0.5, 2.8)	.10	45.2 (4.7)	48.0 (4.9)	1.1 (0.7, 1.9)	.06	23.1 (5.1)	21.7 (4.6)	0.9 (0.4, 2.1)	.03
Worried about cost												
6-month follow-up (%)	34.9 (6.5)	32.9 (5.4)	0.9 (0.4, 1.9)	.04	35.7 (4.4)	30.7 (4.2)	0.8 (0.5, 1.4)	.11	29.0 (4.6)	27.5 (4.1)	0.9 (0.6, 1.6)	.03

	Justice involved (N=158)				Homeless not justice involved (N=298)				Other Poor (N=294)			
	RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS	
	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES
12-month follow-up (%)	30.8 (5.6)	26.4 (7.7)	0.8 (0.3, 2.0)	.10	37.3 (4.3)	23.3 (4.9)	0.5 (0.2, 1.0)	.31	28.3 (4.8)	23.7 (3.7)	0.8 (0.4, 1.4)	.11
Life difficulties total score out of 15			Difference				Difference				Difference	
6-month follow-up (mean)	2.9 (0.4)	1.9 (0.3)	-1.1 (-1.9, -0.2)*	.44	3.3 (0.3)	3.3 (0.3)	0.0 (-0.8, 0.7)	.01	2.6 (0.3)	2.6 (0.2)	-0.1 (-0.7, 0.5)	.03
12-month follow-up (mean)	2.5 (0.4)	2.6 (0.3)	0.1 (-1.3, 1.5)	.04	3.0 (0.2)	2.7 (0.3)	-0.2 (-0.9, 0.4)	.10	2.7 (0.3)	2.5 (0.3)	-0.2 (-1.0, 0.6)	.12

Note: Intervention-by- vulnerable subgroups interaction models used multiple imputed data, weighted for eligible sample for enrollment and accounted for the design effect of the cluster randomization. A linear regression model was used for a continuous variable (presented as between-group difference) or a logistic regression model for a binary variable (presented as odds ratio, OR), adjusted for baseline status of the dependent variable, age, education, race/ethnicity, 12-month depressive disorder and community and accounted for the design effect of the cluster randomization; no significant interactions of intervention by poverty status were found for all outcome variables.

MHQOL, mental health quality of life; RS, resource for services; CEP, community engagement and planning; SE, standard error; CI, 95% confidence interval; ES, standardized effect size.

** p value < 0.01;

* p value < 0.05.

J Am Board Fam Med. Author manuscript; available in PMC 2017 May 01.

Table 6

Service Utilization by Intervention Assignment Among Mutually Exclusive Client Subgroups Below the Federal Poverty Line (Model 2)

	Justice involved (N=158)				Homeless not justice involved (N=298)				Other Poor (N=294)			
	RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS	
	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES
Behavioral health hospital nights			OR				OR				OR	
6-month follow-up (%)	13.5 (4.2)	7.5 (4.4)	0.5 (0.1, 2.3)	.20	11.6 (4.1)	6.3 (2.8)	0.5 (0.1, 2.1)	.19	6.8 (2.7)	4.9 (2.0)	0.7 (0.2, 2.2)	.08
12-month follow-up (%)	4.0 (2.2)	4.4 (2.2)	1.1 (0.3, 4.3)	.02	8.0 (2.0)	5.1 (2.1)	0.6 (0.2, 1.8)	.12	1.8 (1.6)	3.8 (1.8)	2.4 (0.3, 18.2)	.13
Any MHS outpatient visits												
6-month follow-up (%)	52.1 (7.2)	61.0 (7.2)	1.6 (0.6, 4.3)	.18	54.6 (5.1)	52.8 (5.3)	0.9 (0.5, 1.8)	.04	61.4 (5.3)	55.4 (4.2)	0.7 (0.4, 1.4)	.12
12-month follow-up (%)	38.1 (7.5)	42.4 (7.6)	1.2 (0.5, 2.9)	.09	45.6 (5.0)	41.3 (4.6)	0.8 (0.4, 1.6)	.09	50.5 (5.3)	48.1 (4.7)	0.9 (0.5, 1.7)	.05
# MHS outpatient visits			IRR				IRR				IRR	
6-month follow-up (mean)	13.3 (4.4)	10.4 (2.7)	0.8 (0.3, 1.9)	.10	11.3 (3.7)	8.2 (1.8)	0.7 (0.3, 1.9)	.13	11.7 (3.4)	6.9 (1.4)	0.6 (0.3, 1.3)	.24
12-month follow-up (mean)	3.6 (1.0)	4.4 (1.1)	1.2 (0.7, 2.2)	.08	7.6 (1.8)	4.6 (0.8)	0.6 (0.3, 1.1)	.19	5.7 (1.7)	5.5 (1.0)	1.0 (0.5, 1.9)	.02
# MHS outpatient visits received advice for medication if visited												
6-month follow-up (mean)	14.3 (5.9)	5.7 (1.1)	0.4 (0.2, 0.9) *	.31	10.9 (4.4)	4.9 (0.7)	0.5 (0.2, 1.1)	.26	12.4 (4.3)	5.3 (1.1)	0.4 (0.2, 1.1)	.35
12-month follow-up (mean)	6.6 (1.9)	6.1 (1.4)	0.9 (0.5, 2.0)	.05	6.1 (1.3)	6.2 (1.3)	1 (0.6, 1.8)	.01	5.4 (1.8)	6.1 (1.3)	1.1 (0.5, 2.7)	.07
# MHS outpatient visits received counseling if visited												
6-month follow-up (mean)	24.9 (7.2)	9.0 (2.4)	0.4 (0.2, 0.7) **	.48	14.8 (4.5)	12.7 (2.3)	0.9 (0.3, 2.4)	.07	15.8 (5.1)	10.1 (2.5)	0.6 (0.2, 1.7)	.26
12-month follow-up (mean)	8.0 (2.4)	9.0 (1.7)	1.1 (0.5, 2.8)	.08	9.4 (1.9)	7.8 (1.4)	0.8 (0.5, 1.4)	.13	8.9 (2.3)	7.3 (1.6)	0.8 (0.4, 1.5)	.15
Any outpatient substance abuse service or self-help group			OR				OR				OR	
6-month follow-up (%)	39.1 (6.9)	38.8 (5.8)	1 (0.4, 2.3)	.01	24.3 (5.0)	30.9 (4.7)	1.5 (0.7, 3.3)	.15	23.9 (5.9)	26.6 (6.1)	1.2 (0.4, 3.6)	.06

	Justice involved (N=158)				Homeless not justice involved (N=298)				Other Poor (N=294)			
	RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS		RS	CEP	CEP vs. RS	
	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES	Estimate (SE)	Estimate (SE)	Test (95% CI)	ES
12-month follow-up (%)	23.0 (4.7)	22.8 (6.2)	1 (0.4, 2.6)	.01	17.7 (3.9)	20.5 (4.2)	1.2 (0.5, 3.1)	.07	16.0 (4.5)	19.8 (4.5)	1.3 (0.4, 4.3)	.10
Stayed in residential treatment for substance abuse problem												
6-month follow-up (%)	18.4 (4.7)	19.6 (5.4)	1.1 (0.4, 2.7)	.03	10.5 (4.2)	15.7 (4.1)	1.8 (0.6, 5.5)	.16	9.8 (5.2)	12.1 (5.3)	1.3 (0.3, 6.2)	.07
12-month follow-up (%)	7.3 (3.9)	6.8 (3.4)	1.0 (0.2, 4.4)	.02	10.2 (2.7)	8.3 (3.1)	0.8 (0.3, 2.1)	.07	3.7 (2.3)	3.3 (2.0)	0.9 (0.1, 5.9)	.02
Visited primary care												
6-month follow-up (%)	58.3 (6.5)	60.9 (9.4)	1.1 (0.4, 3.4)	.05	64.2 (4.3)	72.0 (4.4)	1.5 (0.8, 2.9)	.17	73.3 (3.8)	65.5 (4.3)	0.7 (0.4, 1.2)	.17
12-month follow-up (%)	53.7 (5.7)	63.7 (7.4)	1.6 (0.7, 3.4)	.20	61.2 (5.4)	70.8 (4.5)	1.6 (0.8, 3.1)	.20	62.8 (4.8)	74.5 (4.3)	1.8 (1.0, 3.3)	.25
# visits in community (informal) sector for depression												
6-month follow-up (mean)	2.8 (1.6)	4.7 (1.7)	1.7 (0.5, 5.8)	.14	1.9 (0.8)	4.5 (1.8)	2.3 (0.8, 7.1)	.11	1.8 (1.2)	4.3 (1.8)	2.5 (0.5, 12.2)	.18
12-month follow-up (mean)	1.3 (0.8)	4.8 (3.1)	3.6 (0.8, 15.7)	.18	2.4 (0.8)	4.2 (1.8)	1.8 (0.6, 5)	.11	1.0 (0.4)	3.2 (1.6)	3.3 (1.0, 11.0) *	.21
# outpatient contacts for depression all sectors												
6-month follow-up (mean)	28.3 (8.0)	33.1 (8.3)	1.2 (0.7, 2.1)	.07	25.2 (7.5)	21.3 (5.5)	0.8 (0.3, 2.7)	.08	22.3 (6.2)	19.1 (4.8)	0.9 (0.4, 1.9)	.08
12-month follow-up (mean)	11.4 (3.5)	21.8 (5.9)	1.9 (1.0, 3.8)	.27	24.5 (4.5)	17.5 (3.9)	0.7 (0.4, 1.2)	.13	20.5 (5.0)	17.5 (3.7)	0.9 (0.5, 1.6)	.09

Note: Intervention-by- vulnerable subgroups interaction models used multiple imputed data, weighted for eligible sample for enrollment and accounted for the design effect of the cluster randomization. A logistic regression model was used for a binary variable (presented as odds ratio, OR) or a Poisson regression model for a count variables (presented as incidence rate ratios, IRR), adjusted for baseline status of the dependent variable, age, education, race/ethnicity, 12-month depressive disorder and community and accounted for the design effect of the cluster randomization; no significant interactions of intervention by poverty status were found for all outcome variables.

MHS, mental health service; RS, resource for services; CEP, community engagement and planning; SE, standard error; CI, 95% confidence interval; ES, standardized effect size.

** p value < 0.01;

* p value < 0.05.