



Regular Research Article

Effectiveness of Case Management with Problem-Solving Therapy for Rural Older Adults with Depression

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ABSTRACT

Objective: To evaluate the effect of case management with problem solving therapy (CM-PST) on depression and disability among rural older adults and compare its effect with outcomes derived from a previous, but similar study among 84 urban older adults. **Methods:** This study examined the comparative effectiveness of a CM-PST intervention for older adults with depression and unmet needs across rural and urban settings. Participants received 12 one-hour sessions of CM-PST with a master's-level clinician. A total of 56 rural and 84 urban adults aged 60 and older experiencing mild to moderate depression received services in their homes. **Results:** The rural CM-PST intervention resulted in significantly reduced depression (reduction of 13.9 points, 95% CI 12.2 to 15.7, $t(422)=15.35$, $p<0.0001$) and disability by week 12 (reduction of 6.7 points, 95% CI 4.8 to 8.5, $t(425)=7.01$, $p<0.0001$). Reductions in depression and disability were sustained through week 24. The reductions in depression ($F=3.98$ $df=4,388$, $p=0.0035$) and disability ($F=2.71$, $df=4,381$, $p=0.03$) found in the rural sample were comparable to, or better than, those found in the urban sample. Improvements in unmet need and resilience predicted lower depression scores at 12 weeks, while improvements in unmet need and hopelessness predicted improvements in disability. No moderators of depression were identified, but baseline values of self-efficacy, resilience, and hopelessness moderated disability. **Conclusions:** CM-PST was as effective at reducing depression and disability among rural older adults as it was for urban older adults. Home-delivered CM-PST can be successfully adapted to meet the specific needs of rural seniors using resources often available in rural communities. (Am J Geriatr Psychiatry 2022; 30:1083–1092)

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Highlights

- **What is the primary question addressed by this study?**

Is the effect of case management with problem solving therapy (CM-PST) on depression and disability among rural older adults comparable to its effect among urban older adults?

- **What is the main finding of this study?**

Following 12 weeks of CM-PST, reductions in depression and disability in the rural sample were significant; and were comparable to, or better than, those in the urban sample. Additionally, the study found that reductions in depression and disability were sustained through week 24.

- **What is the meaning of the finding?**

This study shows that implementing CM-PST for older adults with depression in a rural location is both feasible and effective.

INTRODUCTION

Depressive disorders are common among older adults, with prevalence slightly higher in rural populations than urban populations, though the significance of these differences varies in the literature.¹⁻³ Almost one-fifth of older adults live in rural areas.⁴ Compared to older adults in urban communities, rural older adults have higher rates of isolation,⁵ chronic medical illness,⁶ depression²; experience greater difficulty accessing transportation services⁷; and are subject to minimal service infrastructure.^{8,9} Prevalence rates of major depression in older adults living in the community range from 1%–4% and rise to 8%–26% for those with illness or functional impairment.^{10,11} Beyond family disruption and exacerbation of disability, depression worsens the outcome of medical illnesses,¹² increases mortality,¹³ and results in significant health care costs.¹⁴

Many effective treatments are available for depression in late life.¹⁵ However, rural older adults experience many of the risk factors associated with poor response to antidepressant medications, including: social isolation, limited financial resources, and barriers to care.^{5,8,9,16} Additionally, although psychotherapies are a preferred treatment option among older adults,¹⁷ rural older adults' access to psychotherapies is often impeded by a lack of clinicians and transportation.^{9,16} Lastly, rural older adults are more likely to experience stigma, both public and internalized, about mental health problems, reducing help-seeking behavior.¹⁸ Despite these disparities, rural older adults report high levels of resilience,¹⁹ a personal characteristic akin to self-reliance that is

strongly associated with perceived mental health status.²⁰ Effective interventions for depression in rural older adults must address unmet needs and barriers to care, while building upon rural older adults' capacity for adaptation and growth.

PST teaches problem solving skills that can be used to address various life challenges, reduce stress, and facilitate adaptation.²¹ Over 25 years of clinical research supports PST as an evidence-based behavioral treatment for late life depression proven effective in urban settings with ambulatory, and medically ill older adults; and older adults with executive dysfunction.²²⁻²⁴ Depressed older adults whose major depression improved after receiving PST had increased problem solving skills,²⁴ less disability,²⁵ and improved quality of life.²⁶ While no studies have examined the efficacy of PST among rural older adults, it has the potential to be an effective intervention because: 1) it has documented evidence as a treatment for depression^{23,27}; 2) it is effective for patients across the lifespan, including among patients aged 65 and older, and across service settings²⁸; 3) it is a simple, brief intervention that can be learned and implemented by a variety of community providers (e.g., social workers, case managers, promotoras and health workers)²³; and 4) it is thought to impact depression by increasing self-efficacy, resourcefulness, and resilience.²⁹ It is unknown whether PST would be a sufficient intervention to meet rural older adults' unique needs or barriers to accessing services.^{5,7-9} Consequently, we proposed to supplement PST with clinical case management (CM) as a component of care.^{25,27}

CM links individuals with social services and community resources that may be difficult to access on one's own, such as: insurance assistance, home meal

delivery, caregiving, or transportation. CM for older adults with medical illnesses has resulted in reduced hospital admissions and reduced costs when compared to conventional care.³⁰ Using CM to address socioeconomic issues (e.g., food security, barriers in access to medical or social care) in the early phases of psychotherapy with low-income older adults is a useful treatment engagement tool that addresses unmet needs.³¹ Previous studies suggest that CM alone is beneficial in reducing the depressive symptoms of low-income older adults.^{27,31}

For rural older adults, CM combined with PST (CM-PST) may provide hands-on assistance with navigating poor service infrastructure and addressing socioeconomic needs^{5,8,9} in combination with support in solving life problems, and thus may be more powerful than stand-alone CM or PST. PST adds to CM in that it draws on individuals' existing resources and explicitly demonstrates a structured approach to resolving life problems, a more empowering alternative to simply providing solutions or resources through CM. Moreover, CM-PST can be delivered in the participant's home, overcoming common access barriers for rural older adults. Lastly, home-based care, using appropriate COVID-19 precautions, may be a safer solution than entering clinical or behavioral care settings for vulnerable older adults during a pandemic.

OBJECTIVES

We translated an evidence-based intervention for depression in older adults (CM-PST) to a rural location through a non-randomized clinical trial (RCT) and compared its effectiveness with data from a RCT trial of CM-PST in urban dwelling, disabled older adults.^{25,27} Our primary aim was to determine if rural older adults experience similar benefit to PST as urban older adults.^{25,27} Our secondary aim was to explore predictors and moderators of outcomes for rural older adults, such as: unmet needs, self-efficacy, resilience, and hopelessness.

METHODS

Our methods for recruitment, intervention, interventionists and training, and assessments and outcomes were designed to be as similar as possible to

those of the urban study, which are described elsewhere.^{25,27} Below we describe the specific methods for this rural study.

Recruitment

Participants for this study were recruited between 2013 and 2018 from rural regions of three counties in Northern California: Tuolumne, Calaveras, and Stanislaus. The study was promoted through several community-based organizations including: Catholic Charities, senior peer counseling programs, meal delivery programs, senior centers, and behavioral health departments. In addition, recruitment was conducted via provider referrals, newspapers, radio, websites, message boards, and at health fairs and senior expos. Participants received a \$20 gift card as compensation for participation in each of the comprehensive assessments (baseline, 12, and 24 weeks). Study procedures were approved by UCSF's institutional review board and all participants provided written informed consent.

Individuals aged 60 years and older were eligible for the study if they 1) were able to provide informed consent; 2) resided in a rural location per Health Resources and Services Administration guidelines³²; 3) had a diagnosis of Major Depression, unipolar; 4) had a Hamilton Depression Rating Scale (HAM-D) score ≥ 20 (i.e., meets criteria for major depressive disorders); 5) had a Camberwell Assessment of Need for the Elderly (CANE) score > 2 (i.e., at least one unmet need which could benefit from CM); and 6) were English speaking. Eligibility criteria was similar to that of the comparator group, urban older adults.^{25,27} The urban sample's inclusion criteria also included participation in home delivered meal services (their recruitment partner), functional ability, and low income. These criteria were not applied to our rural sample because we used various modes of recruitment (not just home delivered meals) and were concerned about the studies recruitment capacity if income and functional ability were included in our inclusion criteria.

Individuals were deemed ineligible if they had any of the following: 1) psychotic depression, 2) high suicide risk, 3) presence of any Axis I psychiatric disorder or substance abuse other than unipolar major depression, 4) Telephone Cognitive Screen (T-CogS) score below 24 or clinical diagnosis of dementia by

DSM-IV, 5) acute and/or severe medical illness, 6) use of drugs causing depression, 7) began psychotherapy within the last 3 months), 8) inability to perform activities of daily living with assistance, or 9) residence in a skilled nursing facility.

Intervention

The CM-PST process consisted of three stages: 1) psychoeducation, 2) problem-solving skill acquisition, and 3) relapse prevention.³³ Participants received 12 weekly, one hour, in-home CM-PST sessions with a clinician. The introductory CM-PST session consisted of psychoeducation about depression and its association to unresolved life problems, a review of the CANE assessment collected at screen, an introduction to CM-PST, and training in the use of the Problem List and Action Planning Worksheet. Sessions 2-11 consisted of using CM-PST skills to jointly work through the identification and solving of problems. Session 12 focused on relapse prevention, such as teaching participants how to recognize recurring symptoms of depression and intervene early using problem-solving skills. More details about the development of the CM-PST intervention can be found in previous literature.^{25,27}

Interventionists and Training

Clinicians in both studies were master's-level therapists or social workers, either licensed or in the process of licensure. As in the urban study, we monitored therapists and treatment fidelity to control for therapist effects.^{25,27} Clinicians received training in CM-PST via an eight hour workshop followed by six to eight hours of role play with the study's clinical supervisor via telephone. All sessions were recorded and new clinicians received weekly supervision and feedback on randomly selected CM-PST sessions. Experienced clinicians continued to receive supervision at least once a month. Clinicians were expected to maintain overall adherence ratings of at least 4 of 5 ("good") as rated by an external reviewer. Feedback and correction were provided when scores fell to three or lower. If interventionists were unable to improve adherence ratings after five occasions of feedback from the supervisor, they were not assigned any further participants. This occurred in one instance with a clinician who served four clients.

Assessments and Outcomes

Verbally consenting older adults with a score of at least eight on the PHQ-9 screen were asked to participate in a telephone-based initial assessment to determine eligibility for the study. Participants were asked to complete three comprehensive assessments at baseline, 12, and 24 weeks. Our primary outcome measures were severity of depression (HAM-D) and level of disability (WHODAS), which were assessed at baseline and at 3, 6, 9, 12, and 24 weeks.^{34,35}

Other variables assessed as potential predictors and moderators were met and unmet needs for assistance (Camberwell Assessment of Needs for the Elderly (CANE)),³⁶ self-efficacy (General Perceived Self Efficacy Scale),³⁷ resilience (14-point Resilience Scale),³⁸ and hopelessness (Beck Hopelessness Scale).³⁹ Two Research assistants (MB and SK), supervised by the principal investigator (BH) and co-investigator (RC), administered all assessments. They were trained and supervised by a clinician investigator (RC) and calibrated their responses to one another to ensure interrater reliability. Data from screening assessment were reviewed by both assistants (MB & SK) and the clinician investigator (RC) to determine eligibility.

Data Analysis

Descriptive statistics and comparisons between rural and urban data (Table 1) were conducted using a Mann-Whitney test for numeric variables and chi-square tests for categorical variables. Mixed effects linear regression with random intercepts and slopes (and an unstructured covariance matrix) was used for all analyses with degrees of freedom determined by the Kenward-Roger method. The primary predictor was the interaction of rural versus urban and time. Estimated values and differences are based on least squares means and comparisons between least squares means. In a sensitivity analysis, we repeated the two analyses above without the Caucasian vs non-Caucasian predictor and also in the subset of patients who are Caucasian. Response and remission variables were compared between rural and urban using Fisher's exact tests. Response was defined as a 50% or more decrease in HAM-D scores between baseline and week 12. Remission was defined as a depression score ≤ 10 at week 12. Analyses were conducted using SAS, version 9.4 software.

TABLE 1. Characteristics of rural (N = 56) versus urban (N = 84) samples receiving CM-PST, at baseline.

Variable	Rural	Urban	Total	Test Statistic and Degrees of Freedom Z or X ² (df)	p value
Age, mean ys ± SD	69.3 ± 7.37 (N = 56)	75.1 ± 9.61 (N = 84)	72.8 ± 9.2 (N = 140)	Z=-3.4168	0.0006 ^a
Education, mean ys ± SD	14.4 ± 2.09 (N = 56)	12.9 ± 2.94 (N = 80)	13.5 ± 2.72 (N = 136)	Z=3.2226	0.0013 ^a
Gender					
Female	45 (80.4%)	73 (86.9%)	118 (84.3%)	X ² =1.0876 ^a	0.30 ^b
Male	11 (19.6%)	11 (13.1%)	22 (15.7%)		
Race/Ethnicity					
American Indian/Native Alaska	1 (1.8%)	0 (0.0%)	1 (0.7%)	X ² =130.7407 ⁷	<.0001 ^b
Asian	1 (1.8%)	0 (0.0%)	1 (0.7%)		
Black/African American	0 (0.0%)	15 (17.9%)	15 (10.7%)		
Caucasian	49 (87.5%)	63 (75.0%)	112 (80.0%)		
More than one race	4 (7.1%)	5 (6.0%)	9 (6.4%)		
Choose not to answer	1 (1.8%)	0 (0.0%)	1 (0.7%)		
Unknown/not reported	0 (0.0%)	1 (1.2%)	1 (0.7%)		
Primary Clinical Outcome Variables					
Hamilton Depression Scale (HAM-D), mean ± SD	21.8 ± 2.21 (N = 56)	23.4 ± 3.44 (N = 84)	22.8 ± 3.1 (N = 140)	Z=-2.7891	0.0053 ^a
WHODAS, mean ± SD	24.4 ± 7.48 (N = 56)	35 ± 7.29 (N = 78)	30.8 ± 9 (N = 140)	Z=-6.9809	<.0001 ^a
Other Clinical Variables					
Charlson Comorbidity Index	3.77 ± 2.64 (N = 56)		3.77 ± 2.64 (N = 56)		
T-COGS	25.4 ± 1.02 (N = 56)		25.4 ± 1.02 (N = 56)		
CANE	3.23 ± 1.73 (N = 56)	4.83 ± 1.98 (N = 83)	4.19 ± 2.03 (N = 139)	Z=-4.5185	<.0001 ^a
GPSE	14.4 ± 5.19 (N = 56)	26.4 ± 5.83 (N = 81)	21.5 ± 8.13 (N = 137)	Z=-8.6233	<.0001 ^a
Resilience Scale	55.4 ± 14.9 (N = 56)		55.4 ± 14.9 (N = 56)		
Beck Hopelessness	6.02 ± 2.92 (N = 56)	4.81 ± 2.76 (N = 84)	5.29 ± 2.87 (N = 140)	Z=2.6181	0.0088 ^a

^a Mann-Whitney test.^b Chi-square test.

Using just the rural sample, we identified whether unmet need, self-efficacy, resilience, and hopelessness were predictors of change in depression or disability between baseline and week 12. Prediction was assessed by including a lagged (in time) value of the putative predictor and assessing its statistical significance as well the impact of including the predictor in the analysis. We also tested the moderation effects of unmet need, self-efficacy, resilience, and hopelessness on depression and disability in the rural sample. Moderation was assessed by including a three-way interaction of rural and/or urban and time and the baseline value of the putative moderator.

RESULTS

Participants

Of the 79 participants receiving CM-PST in the rural study, 56 rural CM-PST participants had depression scores ≥ 20 at baseline, and thus were eligible for comparison with the 84 urban CM-PST participants from the previous study. Of the 56 rural participants,

51 (91%) completed the intervention (participating in at least 10 of the 12 sessions). Reasons for drop-out were health decline,² death,¹ or lack of interest in participation.²

Demographics

Table 1 shows the demographic characteristics of the rural and urban samples. The rural sample was significantly younger, had more years of education, and was less ethnically diverse. Rural older adults also reported significantly lower baseline depression severity, less unmet needs, lower self-efficacy, higher hopelessness, and less disability than the urban sample. The difference in inclusion and/or exclusion criteria for the two studies may explain the higher disability in the urban sample. Gender distribution did not differ significantly between rural and urban samples.

Depression Outcomes

Rural versus Urban

Both rural and urban samples improved significantly in depression from baseline to week 12 (Fig. 1).

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The rural intervention resulted in a 13.9 point reduction in depression scores by week 12 (95% CI 12.2 to 15.7, $t(422)=15.35$, $p<0.0001$). Comparing rural and urban samples, reduction in depression scores between baseline and the end of the 12 weeks of intervention was about four points greater in the rural versus the urban sample (reduction of 4.1 points, 95% CI -6.4326 to -1.7977 $t(424)=-3.49$, $p=0.0005$). The improvement in depression ($F=3.98$ $df=4, 388$, $p=0.0035$) found in the rural intervention was comparable to or better than that found in the urban intervention. In both samples, depression scores increased slightly between end of treatment and 24 week follow-up, but the change in scores was not significant and did not differ significantly between rural and urban samples (difference of -0.7 points, 95% CI -3.0787 to 1.6421 $t(519)=-.60$, $p=0.55$).

At week 12, the treatment response variable (50% decrease or more in depression score) was higher for rural as compared to urban participants (64% versus 33%, Fisher's exact $p<0.001$). This was maintained to 24 weeks (59% versus 31%, Fisher's exact $p<0.001$). Remission at 12 weeks (using a threshold of 10) was higher in the rural versus the urban study (61% versus 31%, Fisher's exact $p<0.001$). Results were maintained at 24 weeks (57% versus 30%, Fisher's exact $p=0.002$).

Rural Predictors

Improvements in resilience and unmet needs predicted lower depression scores in the rural sample. For each additional point in resilience, the change in depression between baseline and 12 weeks was lesser by .069 (95% CI 0.025 to 0.114, $t(214)=-3.08$, $p=0.0023$). Additionally, a one point reduction in unmet need was associated with a .648 reduction in depression between baseline and 12 weeks (95% CI 0.034 to 1.262, $t(110)=2.09$, $p=0.039$). Self-efficacy and hopelessness were not found to predict changes in depression in the rural sample.

Rural Moderation

Baseline values of unmet need, self-efficacy, resilience, and hopelessness were not associated with changes in depression in the rural sample.

Disability Outcomes

Rural versus Urban

The level of baseline disability in the urban sample was significantly higher than in the rural sample (difference in least squares means of 9.0, 95% CI 6.3 to

FIGURE 1. Hamilton depression rating scale (HAM-D) outcomes for rural vs. urban CM-PST participants.

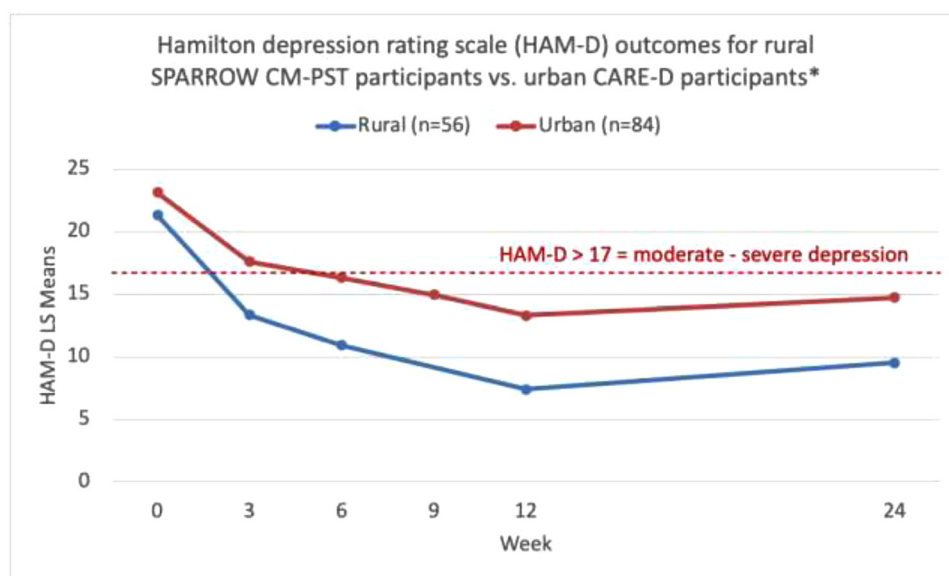
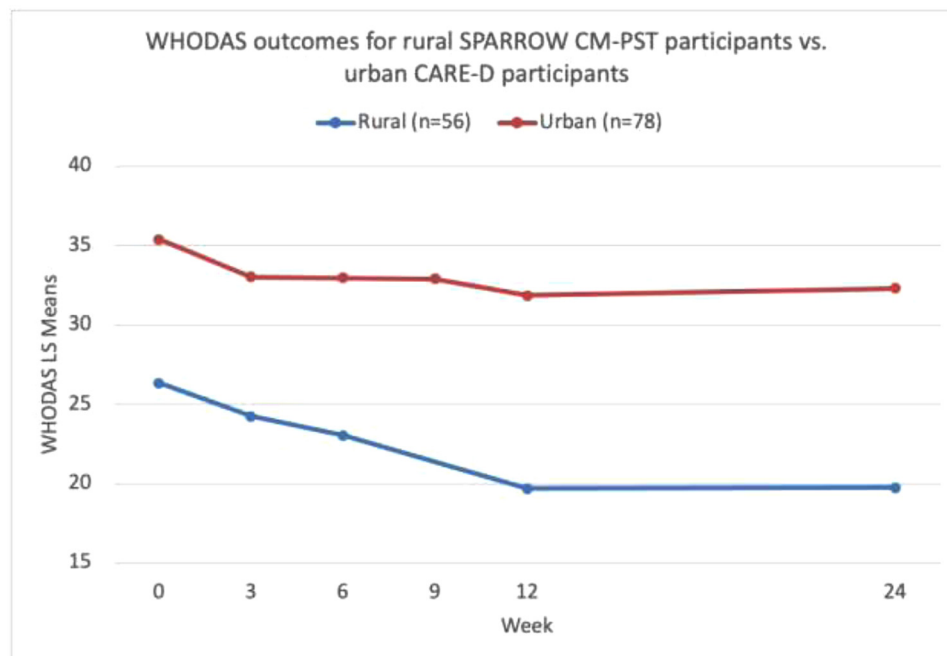


FIGURE 2. WHODAS outcomes for rural vs. urban CM-PST participants.



11.8, $t(179)=6.58$, $p<0.0001$), and these scores remained higher throughout treatment and follow-up time points (Fig. 2). In the rural sample, the intervention improved disability significantly by week 12 (reduction of 6.7 points, 95% CI 4.8 to 8.5, $t(425)=7.01$, $p<0.0001$), improvements which were sustained through week 24. The improvement in disability found in the rural intervention was comparable to or better than that found in the urban intervention ($F=2.70$, $df=4, 381$, $p=0.03$). Improvement in disability scores was 3.1 points greater in the rural versus the urban sample (95% CI from 0.7 to 5.5, $t(427)=-2.52$, $p=0.012$). Results did not appreciably change when the models were adjusted for age, education, and race (white and other than white).

Rural Predictors

Improvements in hopelessness and unmet need predicted improvements in disability in the rural sample at week 12. A one point reduction in hopelessness was associated with a .293 reduction in disability (95% CI 0.032 to 0.553, $t(216)=2.21$, $p=0.028$) and a one point reduction in unmet need was associated with a .986

point reduction in disability (95% CI 0.302 to 1.670, $t(81)=2.87$, $p=0.0053$). Self-efficacy and resilience did not predict changes in disability in the rural sample.

Rural Moderation

Baseline values of self-efficacy, hopelessness, and resilience were associated with changes in disability from baseline to 12 weeks. For each additional point in baseline self-efficacy, the change in disability was lesser by .395 (95% CI -.678 to 0.113, $t(258)=-2.76$, $p=0.0062$). Similarly, for each additional point in baseline hopelessness, the change in disability was greater by .444 (95% CI -.064 to 0.951, $t(258)=1.72$, $p=0.086$). For each additional point in resilience, the change in disability was lesser by .160 (95% CI -.259 to -.061, $t(259)=-3.17$, $p=0.0017$). Unmet need was not a significant moderator of change in disability.

DISCUSSION

This study demonstrated that CM-PST is an effective intervention for rural older adults, and was

shown to be potentially more effective than CM-PST for urban older adults in a previous study.^{25,27} In both studies, improvements in depression and disability were significant after 12 weeks of treatment and gains were maintained through 24 weeks. As in the urban study,²⁵ the benefits of CM-PST on rural older adults' depression and disability occurred rapidly, with improvements seen as early as week 3.

The 24 week response and remission rates in the rural study (59% and 57%) exceeds the average response and remission rates found in antidepressant clinical trials (48% and 33.7%).⁴⁰ These findings are especially promising given the prevalence among rural older adults of risk factors associated with poor response to antidepressant medication.^{5,8,9} Response and remission rates in the rural study were also better than those in the urban study (59% versus 31% and 57% versus 30%, respectively). There were significant clinical differences in the two samples at baseline that may impact the efficacy of the intervention. For example, the rural sample had less disability than the urban sample at baseline, and depression driven by higher levels of disability may be more difficult to overcome. Additionally, it is possible that the 12 weeks of CM-PST were more effective at addressing the lower number of unmet needs or lower depression severity found in the rural sample than the higher levels found in the urban sample. Results should also be interpreted cautiously due to the small sample sizes.

Unmet need

Our findings show that unmet need was a predictor of both improvements in depression and disability at week 12 for rural older adults. Decreases in unmet needs predicted improvements in depression and disability, presumably due to the CM provided. CM is beneficial in rural populations, regardless of availability of other potentially effective treatments, such as "standard" psychotherapy or antidepressant medications. In fact, it is possible that the rapid pace of improvement seen in both the rural and urban studies are the result of CM efforts quickly resolving unmet needs.

Self-efficacy

Self-efficacy moderated the disability outcomes of rural older adults, with those reporting lower self-

efficacy at baseline showing greater improvements in disability than those with higher self-efficacy at baseline. Our rural sample reported lower self-efficacy at baseline than the urban sample. Given these findings, efforts should be made to ensure that low self-efficacy in rural participants especially does not impede access to CM-PST interventions.

Resilience

Among rural older adults, improvements in resilience predicted improvements in depression at 12 weeks. In other words, the effect of the intervention on depression is potentially the result of its impact on self-reported resiliency. Mental health treatments, including CM-PST, are intended to promote resilience by helping people build the capacity to manage life stressors and difficult emotions rather than simply "cope" with symptoms. The fact that CM-PST was associated with increased resilience, which temporally preceded improvements in depression, supports CM-PST as a robust treatment that builds capacity to manage life stressors, possibly reducing vulnerability to future depressive episodes.

Hopelessness

For rural older adults, hopelessness was both a predictor and moderator of improvements in disability at week 12. This implies that the intervention may impact disability by increasing hope in participants. Additionally, participants with higher hopelessness at baseline showed greater improvements in disability than those with lower baseline hopelessness scores. These findings imply that CM-PST may be most effective for especially hopeless participants and that by decreasing hopelessness, those participants experience improved disability.

Limitations

The current study is not an RCT, but a comparative analysis of a rural sample assigned to the same intervention as an urban sample. One limitation of the rural study concerns the sample's lack of diversity, which limits the study's generalizability. However, while the rural sample was significantly younger, had more years of education, and was less ethnically diverse compared to urban sample; results were not

appreciably changed when the models were adjusted for age, education, and race (white and other than white). Previous research supports the use of PST across age groups, education levels, and in various cultures,⁴¹ and indeed the treatment protocol for PST has been translated into many languages. As a newer iteration of PST, CM-PST will require translation and research in more diverse and non-English speaking communities. In the urban study, CM was found to be non-inferior to CM-PST, suggesting that CM was sufficient to reduce depression. Due to anticipated challenges in recruitment, the rural study only examined the effects of the combined treatment, CM-PST. We are thus not able to comment on whether stand-alone CM would have been as effective as CM-PST in the rural location. Despite these limitations, the data is promising and encourages further replication, translation, and research of CM-PST as an intervention for depressed older adults.

CONCLUSION

CM-PST in a rural location was shown to be as effective as CM-PST in an urban location on improving depression and reducing disability, despite the additional disparities and challenges to accessing services faced by rural older adults. CM-PST may improve depression through increasing resilience and addressing unmet needs. Rural participants who were more impaired at baseline, with higher hopelessness and lower self-efficacy and resilience, benefited more from the intervention in terms of improved disability at 12 weeks. We consider this a positive finding as CM-PST can effectively be used to serve those most in need of services in rural locations.

This study shows that implementing CM-PST in a rural location is both feasible and effective. CM-PST can be delivered by social workers, a workforce resource more available in rural locations than other

mental health professionals. Additionally, CM-PST can be delivered in the client's home, overcoming barriers to access due to transportation challenges. Home delivered services, adhering to COVID-19 guidelines, may also be a more acceptable and less risky form of treatment for vulnerable older adults during a pandemic. By improving depression and disability, CM-PST may decrease unnecessary utilization of health care services and health care costs as well as improve quality of life and health outcomes for clients.

AUTHOR CONTRIBUTIONS

BH and PA contributed to the study design, analysis and interpretation of data, and drafting of this manuscript. RC contributed to monitoring of study clinicians, analysis and interpretation of data, and drafting of this manuscript. SK and MB contributed to study implementation, data collection and management, and the drafting of this manuscript.

DATA STATEMENT

The data has not been previously presented orally or by poster at scientific meetings.

DISCLOSURES

The authors have no disclosures to report.

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