Problem-Solving Therapy for Subthreshold Depression in Home Healthcare Patients With Cardiovascular Disease

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Background: *Randomized trial evaluated problem-solving therapy in home care (PST-HC) for homebound older adults with cardiovascular disease receiving acute home care services. This study hypothesized that compared with usual care plus education intervention, home-based PST-HC would significantly reduce depression and anxiety scores, lead to improved quality of life, and greater satisfaction with treatment among elderly with cardiovascular disease.* **Methods:** *Thirty-eight participants were recruited from a university-affiliated home healthcare agency for the trial. Six 1-hour PST-HC sessions included depression education, problem-solving skills, pleasurable activity scheduling, homework, and weekly telephone calls over a 6-week period. The control comparison group received usual care plus two sessions of education and a depression brochure. Outcome measures included the Beck Depression Inventory, Hamilton Rating Scale for Depression, Beck Anxiety Inventory, and the short form (SF)-36 health status measure. After the intervention, both groups completed the Patient Satisfaction Questionnaire.* **Results:** *Compared with the control group, the PST-HC group showed a significant decrease in depression but not anxiety scores. The PST-HC group generally reported more favorable satisfaction with treatment than the control group. The PST-HC group improved significantly, when compared with the control group in only two of eight SF-36 subscales: mental health and emotional role function.* **Conclusions:** *The brief PST-HC intervention demonstrated that depression improved among home care elderly. However, there was no change in six of eight health status measures or anxiety level. Authors discuss integrating interdisciplinary depression care in the home care setting.* (Am J Geriatr Psychiatry 2010; 18:464–474)

Key Words: Depression, homebound elderly, heart disease, home healthcare

Late-life depression is associated with significant functional decline and increased healthcare utilization. The World Health Organization global bur- den of disease study ranks it second only to heart disease in burden (impact on disability-adjusted life years).[1] Depression is prevalent among medically ill

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home care elderly with estimates of 13.5% for major depression.[2] Depression is twice as prevalent in the home healthcare environment as in primary care.[3] Despite this high prevalence rate, only 12% of home care elderly with major depression receive adequate treatment, even though effective evidence-based treatment options for depression exist.[2]

Heart disease is the most common primary diagnosis and the leading cause of death among elderly home healthcare patients confined to their homes due to medical disability.[4] It is also one of the main causes of hospitalization of older adults and is associated with greater impairment than arthritis, diabetes, or lung disease.[5] Major and subthreshold depression is common among cardiac patients where prevalence rates range from 16% to 37%.[6-9] Thus, cardiac disease and depression are common comorbid conditions in home healthcare, and these patients are at high risk for negative outcomes.

The consequences of depression in late life are potentially serious for the older cardiac patient. Hypertension, hypoglycemia, and coronary artery disease can be worsened through depression.[10] These medical disorders are often associated with increased fatigue, greater levels of chronic physical illness, increased disability, decreased psychological well-being, increased healthcare costs, and decreased life satisfaction among older adults.[11-13] Most importantly, subthreshold depression is a key risk factor for major depressive disorder, and older people with depression report increased suicidality.[14-16]

Studies have also found a strong association between anxiety and heart disease[17-19] and its frequent cooccurrence with depression.[20,21] Given the significant negative consequences of heart disease and comorbid psychiatric disorders, including low rates of depression treatment among medically disabled elderly,[22,23] brief, effective, and sustainable psychosocial interventions to significantly reduce symptoms and enhance the quality of life of homebound elderly patients are needed.

To improve mental health screening in medically ill older adult patients, researchers have examined the role of home care nurses in assessing for geriatric depression.[24-26] Screening for depression in home healthcare settings is mandated by Medicare, although not part of routine care. When depression is detected, a common intervention approach in home healthcare is a referral to the patients' primary care physician for an assessment. Screening and assessment of patients are important though insufficient clinical tasks in evidence-based depression care. However, the use of psychosocial treatments remains uncommon among depressed home care older adults despite its widely acknowledged efficacy in other patient populations.

Specific attention to the treatment needs of depressed older home care patients is critically needed. One recent trial, by this research group, has provided data on the feasibility, acceptability, and effectiveness of the treatment known as problem-solving therapy in home care (PST-HC) among medically ill elderly receiving home healthcare services.[27] However, the initial study did not examine anxiety outcomes nor did it specifically target heart disease patients.

To date, no study has evaluated the effects of PST to reduce depression in home care elderly with heart disease. Given the robust empirical evidence of PST on depression outcomes, the objective of this randomized trial compares PST-HC and usual care plus education for home care elderly diagnosed with cardiovascular disease. The decision to target this group was based on several reasons. First, our previous work determined that a large percentage of home care patients (44%) had a primary diagnosis of heart disease.[27] Second, depression may be an independent risk factor for the onset of heart disease, suggesting that patients are at high risk for negative outcomes. Third, heart disease is the leading cause of death among home care elderly patients.[4] Finally, PST-HC may be potentially useful in using problem-solving strategies for medication compliance because depression may also jeopardize adherence to treatment regimens including needed medication.

The study reported here hypothesized that among elderly home healthcare patients with heart disease, patients receiving six 1-hour sessions of home-delivered PST-HC, when compared with an educational control, would experience greater short-term improvements in depression and anxiety scores, improved health functioning, and satisfaction with treatment. PST-HC treatment components included depression education, problem-solving strategies, and pleasurable activity scheduling (based on behavioral activation theory).

Problem-Solving Therapy in Home Care

PST-HC (Table 1) is an adapted model (described elsewhere[26]) based on published procedures.[28-30]

TABLE 1. Problem-Solving Therapy in Home Care (PST-HC)

Session	Content
1	Orient and introduce Problem-Solving Therapy for Depression in Home Care (adopt positive attitude toward problem solving); explain relevance between daily problems, stress, mood, and pleasurable events; review causes, symptoms, medications, treatments for depression; identify and define nature of stressful problems in daily living; identify patient coping responses; realistic goal setting for relief of problem; orient to and choose two pleasurable activities (daily scheduling); set homework activity; obtain permission to contact and update primary care physician; and brief telephone contact with patient during week for homework reminder/follow-up.
2	Review homework; review log of pleasurable activities; review symptoms; review coping responses to problem; identify problem-solving style; review goals; generate alternative solutions; identify/choose 1–2 solutions (predict effectiveness/consequences); try chosen solutions with action plan and monitor outcome; troubleshoot any difficulties; set homework; choose two pleasurable activities; and brief telephone contact during week for homework reminder.
3	Review homework; review performance outcome for chosen solution; teach patient to reward self for efforts in attempted problem solving; review log of pleasurable activities; review symptoms; review goal and alternative solutions if solution was less than successful, or examine new problem and renew goals; generate alternative solutions; choose 1–2 solutions (predict consequences); try solutions with action plan, monitor, and evaluate outcome; troubleshoot any difficulties; set homework; choose two pleasurable activities; brief telephone contact during week for homework reminder; and review patient progress with assigned homecare provider.
4	Review homework; review performance outcome for chosen solution; patient rewards self for efforts in attempted problem solving; review log of pleasurable activities; review symptoms; review goal if solution was less than successful, or examine new problem and renew goals; generate alternative solutions; choose a solution (predict consequences); try solution with action plan, monitor, and evaluate outcome; set homework; troubleshoot any difficulties; choose two pleasurable activities; and brief telephone contact during week for homework reminder.
5	Review homework; review performance outcome for chosen solution; patient rewards self for efforts in attempted problem solving; review log of pleasurable activities; review symptoms; review goal if solution was less than successful, or examine new problem and renew goals; generate alternative solutions; choose a solution (predict consequences); try solution with action plan, monitor, and evaluate outcome; set homework; troubleshoot any difficulties; choose two pleasurable activities; prepare patient for clinical termination; review PST -HC steps; brief telephone contact during week for homework reminder; and review patient progress with homecare provider.
6	Review homework; review performance outcome for chosen solution; patient rewards self for efforts; review log of pleasurable activities; review symptoms; review goal if solution was less than successful, or examine new problem and renew goals; generate alternative solutions; choose a solution (predict consequences); try solution with action plan, monitor, and evaluate outcome; set homework; troubleshoot any difficulties; choose two pleasurable activities; clinical termination with patient; review PST-HC steps and wrap-up; and review progress with patient and homecare provider.

PST seems well suited for medically ill older adults given its collaborative and problem-centered approach to daily living with stressful chronic medical conditions. Several reviews[31,32] have highlighted the efficacy of PST among a variety of adult samples including depressed community-dwelling older adults,[33,34] adult cancer patients,[35] and depressed primary care patients.[36] One review found that the mean effect size for PST in the treatment of major depression is 0.83, indicating that PST is a robust psychosocial depression intervention, when compared with other psychosocial interventions.[37,38]

Our research group has recently published findings of a pilot randomized trial on PST-HC for feasibility and acceptability among depressed medically ill older adults in home care settings, although without a focus on cardiovascular disease. This is new original research and is the first study of which we are aware that addresses the potential utility of a brief six-session home-delivered PST-HC depression intervention for older adults with cardiovascular disease receiving home healthcare services.

METHOD

Sample

During a 12-month period (January 2007–December 2007), 75 cognitively intact older homebound patients with cardiovascular disease, aged 65 years and older, were recruited from an academically affiliated acute home healthcare agency, which served urban, suburban, and rural settings. Eligible patients were asked to participate in a study examining the relationship between functional status and depression in older medically ill home care elderly. The recruiting information offered an educational component to improve knowledge about physical and

psychological functioning in depressed patients. Participation was voluntary after informed consent was obtained, and patients were compensated for interviews. Diagnosis of cardiovascular disease was confirmed by reviewing the patient's medical record and included coronary heart disease (N = 9), coronary artery disease (N = 14), heart failure (N = 7), and atherosclerosis (N = 6).

Patients with the following coexisting chronic conditions in the medical record were excluded: cancer, coronary artery disease requiring surgery or angioplasty, renal disease on dialysis, dementia, and psychotic disorder. Before random assignment, patients were asked about their treatment preferences (counseling or medication) for depression management. Randomization was completed by an independent biostatistician, and patients were assigned to PST-HC intervention or usual care augmented with education.

Eligible participants were cognitively intact and met Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, criteria (using a structured clinical interview for Diagnostic and Statistical Manual of Mental Disorders: Structured Clinical Interview for DSM-IV-TR) for subthreshold depression symptoms (included patient reports of two to four symptoms for at least 1 week at subthreshold level (defined as not meeting the "most of the day, nearly everyday" threshold, and one of the required symptoms was either depressed mood or anhedonia). Patients with major depression were excluded and referred to their primary care physicians as part of the study protocol. Eligible participants also scored 22 or higher on the 11-item Center for Epidemiologic Studies Depression Scale (CES-D).[39] The CES-D is a reliable and valid measure that screens for current level of depressed mood in the general population and is well established with elderly samples.[39] The short-form scores are standardized to the original 20-item scale. The established cut point of 16 or more corresponds to the likelihood of depression.

Outcome Measures

Beck Depression Inventory. The 21-item Beck Depression Inventory (BDI) is a widely used depression scale listing common symptoms of depression that the respondent may have experienced in the past week.[40] The scale has been used extensively in research and clinical settings and with geriatric populations.[41]

Hamilton Depression Rating Scale. The Hamilton Depression Rating Scale (HAM-D) is a well established 17-item interviewer-rated depression assessment instrument that has been validated with older samples.[42]

Beck Anxiety Inventory. The Beck Anxiety Inventory (BAI) consists of 21 common anxiety symptoms that are rated by the subject on a 4-point scale. Studies examining the psychometric properties of the BAI have reported high reliability and adequate sensitivity among older adults.[43,44]

Medical Outcomes Study Short Form. Patient functional health status and well-being were assessed using the well validated short form (SF)-36 subscales.[45] Scores were transformed, so that each subscale ranged from 0 (total dissatisfaction) to 100 (total satisfaction). Higher scores indicate better self-reported functional health. Studies in the general population and samples of heart patients have demonstrated that the SF-36 is a valid measure of health status.[45,46]

Patient Satisfaction Questionnaire. The Patient Satisfaction Questionnaire (PSQ) short version[47] adapted for this study is an 18-item instrument with seven subscales measuring general satisfaction, quality, interpersonal manner, communication, financial aspects of care, time with home care worker, and accessibility. Statements are rated on a 5-point Likert scale from strongly agree to strongly disagree and takes 3–4 minutes to complete. Individual PSQ-18 scores are expressed as means (range: 1–5). Acceptable internal consistency reliability (alpha range is 0.83–0.92 across the seven scales) has been shown.[47] The PSQ-18 was administered to both conditions 6 weeks after baseline to assess for treatment satisfaction.

Procedures

Pretreatment assessment occurred before the first session by an independent rater who arranged home-based interviews. Participants were asked to complete a battery of assessment scales including the BDI, BAI, SF-36, and HAM-D. Participants who needed help with these tasks due to physical disability answered the questions posed to them orally by the interviewer.

All patients meeting study criteria were referred to their primary care physician for antidepressant medication assessment as part of the home healthcare agency mental health protocol. Because prescription rates of antidepressants by primary care physicians have more than doubled in the past 2 decades,[22,23] a referral to the patient's physician would not necessarily affect the study one way or the other, and a referral was considered routine care in the agency. To ensure participant safety in the home care setting, controls were called on two occasions, and counseling was not provided during these telephone calls, only minimal information. The purpose of the call was to assess the need for crisis management or an urgent referral outside the protocol. At the end of 6 weeks, posttreatment assessments were completed on both intervention and control patients by an independent blinded rater. These included readministration of outcome assessments (BDI, BAI, HAM-D, and SF-36) and administration of the PSQ-18.

Intervention Conditions

Problem-Solving Therapy in Home Care. PST-HC was based on PST procedures for depression[28–30] and described in our previous work with homebound medically ill home care elderly.[26] Standard PST was adapted in several ways to increase its feasibility for homebound depressed patients with coexisting medical illness. First, brief PST-HC was provided in the patient's home. Second, treatment was provided in six weekly 1-hour sessions conducted over a 6-week period (Table 1). Third, the interventionist was directed to ensure that the treatment protocol be tailored to the specific daily living stressors of each individual patient. Finally, the participant was also instructed in daily pleasurable activity scheduling. Educational brochures on the topics of depression and quality of life were used. During the first session, a general introduction and orientation to PST-HC was provided. Patients learned about the frequency and severity of depression symptoms and chronic medical illness. The components of depression (i.e., signs, symptoms, thoughts, and behaviors) were identified and reviewed, and participants were asked to describe problems from their own life experience to develop realistic treatment goals. Additionally, sessions focused on medication adherence, diet and nutrition plans, exercise plans, signs of heart attack and

stroke, and family relationships. Fact sheets and educational brochures on heart disease were also used as part of education.

In all PST-HC sessions, patients were instructed in the use of three types of problem-solving coping skills to assist in their daily living and in the control of depression symptoms. Initially, problem identification and orientation strategies were utilized. Second, thought stopping and self-instructional problem-solving techniques were demonstrated and practiced in an effort to reduce and alter maladaptive thoughts associated with depression. Participants were directed to choose and complete two pleasurable activities each day from an extensive list adapted from the Pleasant Events Schedule.[48] During sessions, participants spent time practicing new problem-solving coping skills to assist in the modification of behaviors that maintain depression symptoms. Patients were given "forms" reviewing the problem-solving strategies. Patients were encouraged to use the learned techniques daily and to review the material as needed.

All patients who completed PST-HC did so in six sessions. For treatment fidelity, the PST-HC therapist received 2 weeks of PST-HC training (before the start of the study) based on a PST treatment manual for depression, weekly discussion and monitoring for fidelity to the PST-HC model, and ongoing clinical supervision.

Usual Care Plus Education Condition. Participants in the usual care plus education condition (UC + E) received six routine nurse case manager home visits that included two educational sessions on cardiovascular disease and a depression brochure. During routine home visits, the nurse case manager tasks included monitoring of blood pressure, weight, pulse, temperature, discussion on diet and exercise, and medication review. As part of the home healthcare agency's mental health protocol, patients were also referred to their primary care physician for antidepressant medication assessment. UC + E participants were called twice over the 6-week period for a brief check in, although no counseling was offered. At the end of 6 weeks, posttreatment assessments were conducted, with procedures identical to the PST-HC group.

Data Analyses

An "intent to treat" analysis was conducted with all randomized patients kept in the analysis. Baseline

demographic variables were compared by using independent sample *t* tests and χ^2 tests. Random effects regression models (RERMs) was the main analytic method used for assessing outcome measures. RERMs are also known as hierarchical linear models, mixed effects models, random coefficient models, and multilevel models.[49] Outcome measures were analyzed at baseline and again at posttest by using RERMs to test for the effects of condition, time, and condition by time interaction. Because we hypothesized significant changes over time in participant outcomes, we deemed the condition by time interaction effects to be most relevant, rather than time or main effects. RERMs offer several advantages over other repeated measures designs because they include missing case data.[49] The final step included an assessment of participant self-reports of satisfaction with the treatment. A *t* test compared PSQ-18 scores at posttreatment in both conditions.

TABLE 2. Demographic Variables by Problem-Solving Therapy and Usual Care + Education Conditions

Variable	PST-HC Intervention Group (n = 18)	UC + E Group (n = 18)
Age (years), mean (SD)	75.6 (3.1)	76.2 (2.8)
Years of education, mean (SD)	12.0 (3.4)	11.8 (3.7)
Gender (% female)	94.4	88.8
Marital status (%)		
Never married	16.7	16.7
Divorced/separated	27.8	27.8
Widowed	44.4	50.0
Married	11.1	5.5
Race/ethnicity (%)		
African American	5.6	5.6
White	94.4	94.4
Living arrangements (%)		
Living alone	88.9	88.9
Living with others	11.1	11.1
Mean (SD) number of medical conditions	5.1 (1.1)	5.4 (0.9)

Notes: N = 36. Percentages are within-group.

RESULTS

During a 1-year period, 75 homebound individuals were invited to participate. Of the 37 who were excluded, 24 (64%) did not meet inclusion criteria and 13 (35%) declined to participate in the study for the following reasons: refused to provide a reason (29%), did not wish to participate (35%), and declined due to ill health (36%). Thirty-eight homebound cognitively intact older participants were recruited for the study, passed the eligibility screen, and enrolled by signing a consent form. They were randomly assigned to receive PST-HC (N = 19) or usual care plus education condition (N = 19), and baseline measures were taken. Two patients dropped out, one from PST-HC and one from usual care condition after random assignment but before taking pretest measures due to hospitalizations. All participants had a diagnosis of cardiovascular disease and met criteria for subthreshold elevated depressive symptoms. Statistical comparisons between those excluded individuals and the enrolled patients revealed no differences regarding any of the measures or demographic parameters.

Table 2 presents the study sample demographics. The typical home care patient was female, living alone, with a mean age of 75.9 (SD = 9.6) years and 12.2 (SD = 1.4) years of education. Participants had moderate levels of depression (BDI; 27.4 ± 5.1) and mild levels of anxiety (BAI; 16.5 ± 4.6). Patient records indicated that 11% of the experimental group and 12% of the usual care plus education group were receiving an antidepressant medication prescribed by their primary care physician at the time of the baseline assessment. A majority of participants (63%) reported that they preferred talking to a counselor about their depressive symptoms rather than receive antidepressant (37%) medication. At the end of 6 weeks, there were no significant differences between the usual care plus education (UC + E) and PST-HC groups with respect to the proportion of participants receiving antidepressants overall (61% versus 66% $\chi^2_{[1]} = 0.28$, p = 0.55).

Pre and post means on outcome variables for the PST-HC and UC + E conditions are given in Table 3. Comparison of the PST-HC intervention and UC + E indicated that PST-HC was superior to UC + E for lowering patients' depression scores as shown in the time by group effect across treatments in Table 3. Specifically, the PST-HC group reported a significantly larger decrease in depressive symptoms (moving from moderate to mild levels) than the Education control on both the BDI (*F* 7.91, *df* [2,33]; p <0.01) and the HAM-D scales (*F* 6.83, *df* [2,33]; p <0.0.01). The UC + E group did not demonstrate significant within group changes in either depression or anxiety.

TABLE 3. Pre- and Posttest Means and Standard Deviations for Self-Report Ratings by PST-HC (n = 18) and UC + E (n = 18) Conditions

Outcomes	Baseline		6 Weeks		*F* Statistic (*df*) Time × Condition	p Value for Treatment
	M	SD	M	SD		
BDI					7.91[a]	0.008
PST-HC	27.6	6.1	18.3	7.7		
UC + E	27.1	4.9	25.8	7.5		
Effect (95% CI)			−0.99 (−1.66 to −.27)			
HAM-D					6.83[a]	0.006
PST-HC	17.9	8.8	11.4	8.3		
UC + E	18.2	9.5	17.3	8.1		
Effect (95% CI)			−0.72 (−1.38 to −0.03)			
BAI					2.26	0.39
PST-HC	16.2	9.1	15.3	8.2		
UC + E	16.7	8.9	15.6	9.3		
SF-36 scores						
General health					1.81	0.84
PST-HC	41.4	20.4	40.5	21.1		
UC + E	40.9	21.4	39.8	20.6		
Mental health					4.17[b]	0.05
PST-HC	52.4	21.4	59.5	22.3		
UC + E	52.2	22.1	54.7	21.6		
Physical function					1.93	0.67
PST-HC	20.3	21.6	21.4	22.1		
UC + E	20.6	24.7	21.3	23.4		
Bodily pain					1.68	0.43
PST-HC	45.8	30.4	46.1	30.6		
UC + E	44.7	29.5	45.3	30.1		
Role emotional					4.02[b]	0.05
PST-HC	58.2	43.4	66.5	41.2		
UC + E	57.9	44.2	59.2	42.3		
Role physical					2.14	0.57
PST-HC	18.6	28.2	18.7	28.1		
UC + E	19.1	26.4	18.9	25.8		
Social function					1.56	0.61
PST-HC	43.5	31.3	44.1	30.8		
UC + E	43.2	31.6	43.7	31.2		
Vitality					1.32	0.69
PST-HC	32.9	21.4	33.0	22.5		
UC + E	32.1	22.1	31.4	22.3		

Notes: SF-36: Medical Outcomes Survey. *df* (2,33).
[a]p <0.01.
[b]p <0.05.

Table 3 reports significant interaction effects for two subscales of the SF-36 health-related quality of life measure. PST-HC participants had statistically significant increases in their mental health and emotional role functioning subscale scores over time. In comparison, participants in the UC + E had no significant increases over time. No other significant effects were found for either condition on any of the other SF-36 subscales.

With regard to treatment satisfaction in Table 4, comparison of PST-HC and UC + E conditions indicated significant differences on several of the subscales. PST-HC participants reported greater satisfac-tion with time spent with staff, accessibility, communication, interpersonal manner, and overall satisfaction with treatment delivery, when compared with the usual care plus education control participants. No significant differences were found on quality of care and financial aspects of treatment services.

DISCUSSION

Results of this pilot randomized controlled trial indicated that the PST-HC intervention had significant

TABLE 4. Mean Satisfaction Ratings by Condition on the Patient Satisfaction Questionnaire (PSQ-18)

| | Posttreatment, Mean (SD) | | |
	PST-HC (n = 18)	UC + E (n = 18)	*T*
Aggregate PSQ-18 score	4.4 (0.9)	3.9 (0.9)	3.38[a]
PSQ subscale scores			
Quality of care	4.3 (0.9)	4.2 (0.7)	0.81, ns
Time spent with staff	4.4 (1.1)	3.5 (0.9)	5.91[b]
Accessibility	4.1 (1.0)	3.5 (0.8)	3.92[a]
Communication	4.3 (0.8)	3.6 (0.9)	5.67[b]
Interpersonal manner	4.6 (0.8)	3.8 (0.8)	5.88[b]
Financial aspects	4.2 (0.8)	4.4 (0.9)	0.89, ns
Overall satisfaction	4.3 (1.0)	3.9 (0.9)	3.21[a]

Notes: *df* = 16. ns: not significant.
[a] p <0.05.
[b] p <0.01.

positive effects on older home healthcare patients with cardiovascular disease. Patients who received PST-HC reported significantly greater decreases in depression symptoms on the BDI and the HAM-D and increases in the mental health and emotional role functioning subscales of the SF-36 than participants in the control condition. Participants in the PST-HC condition reported greater overall satisfaction with treatment, when compared with the educational control, although both study groups were generally satisfied with services. We did not find significant effects for participants on anxiety outcomes. Despite a decrease in depression scores, there was no change in the physical functioning scores as hypothesized. We also note that even with a statistical difference on depression outcomes, many participants in the PST-HC condition still reported some depressive symptoms, albeit, in the "mild" category.

These findings are important from a public health perspective as cardiovascular disease is the most prevalent condition treated by Medicare home health services and is strongly associated with depression. Heart disease and depression are the top-ranked contributors to disability by World Health Organization.[1] Because the depression intervention was conducted by clinical social workers whose home-based psychotherapy visits were reimbursable under current Medicare regulations, the PST-HC offers a potentially sustainable service delivery approach by home care agencies to improve the mental health and quality of life of a large and high-risk group of homebound patients.

These findings indicate that active engagement in a structured manualized treatment (PST-HC) helped depressed elderly patients with cardiovascular disease experience a decrease in their depressive symptoms in a short period of time, when compared with patients receiving usual care plus education. These preliminary results are consistent with a previous randomized controlled trial of general medically disabled home care elderly that compared PST-HC with usual care.[26] Similar to our results, the previous study reported that PST-HC participants improved significantly more on self-reported measures of depression (BDI and GDS), when compared with controls. Given the results of the present and previous studies, further research that examines the effectiveness of the depression treatment techniques specific to PST is warranted in a larger ethnically diverse medically ill homebound elderly population.

An explanation for the lack of change in the SF-36 physical functioning scales is that improvements in outlook associated with decreased depressive symptoms were insufficient to change self-reports in this patient population. Another potential explanation is that the SF-36 measure of physical functioning may not have been sufficiently sensitive to detect changes in quality of life scores in the physical functioning domain. The insignificant findings on the anxiety measure can be explained by the fact that the treatment was not sufficiently tailored for anxiety. The PST-HC protocol does not offer relaxation training, guided imagery, or some other type of traditional anxiety intervention component.

There are several limitations of this study. Because this is a small randomized trial examining depressed homebound elderly patients diagnosed with cardiovascular disease, larger and more diverse samples would help determine the generalizability of these findings. The study only examined immediate outcomes and the long-term impact of treatment is unknown in this patient group. More personalized and tailored approaches may be required to meet the needs of subsets of patients defined by, for example, sociodemographic characteristics, social isolation factors, or region of the country. We do not know whether

PST-HC is effective in elderly patients with more severe depression or with cardiovascular patients who have significant medical comorbidity. In larger outcome trials, the impact of potential predictor variables, including, severity of comorbid medical conditions and pretreatment severity of psychiatric symptoms should be examined. In addition, the potentially synergistic impact of PST-HC and antidepressant medication needs to be investigated, as does long-term impact of treatment on service utilization, including medication use and economic variables.

The potential utility of PST-HC will be enhanced when integrated into a set of interventions designed to improve detection, treatment, and care management of depression in home healthcare services. Our group has demonstrated that depression detection and referral can be improved through training nurses in the clinically meaningful use of the depression items that are already part of Medicare's mandatory outcome and assessment information sets (OASIS) assessments,[24,25] whereas others have effectively augmented mandatory assessments with depression screening scales such as the PHQ-9[26] or the CES-D.[27] The data described here and elsewhere demonstrate that brief home-based psychotherapies are effective treatment options in addition to antidepressant medication. Our group[24,25,27] and others[50] have been investigating different approaches to tailoring depression care management to fit within the organization and practice of home healthcare. The potential success of integrated depression care will be enhanced with ongoing collaboration and communication among each patient's home healthcare nurses, therapist, and primary care provider, a goal consistent with the interdisciplinary team approach promoted in home care.

Home healthcare providers are uniquely positioned to provide assessment and treatment services for depressed homebound older adults. Clinical social workers are skilled in general therapeutic counseling, and this study demonstrated that they are also able to be trained as PST therapists. An advantage of working with home care social workers is that they can be reimbursed by Medicare for home-based depression treatment services, thus providing a low-cost practical alternative to other psychosocial depression treatments. PST-HC is tailored to the homebound patient's needs based on reported daily living stressors due to their medical condition. For the PST-HC depression care intervention to be advantageous to home care agencies, it will be necessary to demonstrate that depression treatment services are cost-effective and are of integral value to the agency, staff, and patients. Older patients with subthreshold depression and cardiovascular disease experience greater dysfunction than those without medical disability. Depressed home care patients may benefit from PST-HC because it helps them cope and solve problems that interfere with their management of a chronic medical condition. PST-HC provides information and education on depression and helps patients develop new problem-solving strategies for dealing with daily living stressors.

An important goal of the national strategy for Psychosocial Intervention Research in Late Life Mental Disorders is to focus new research on the adaptation and dissemination of depression care interventions for older adults in community-based settings.[51]

There is a critical need for brief and effective integrated intervention options for geriatric depression in home healthcare. Depression is prevalent among isolated home care older adults confined to their homes by medical illness and disability. Their homebound status remains a barrier for access to depression care. Left untreated, depression leads to deterioration in physical functioning, exacerbation of medical conditions, and increased risk for suicide.

This study describes a "real world" interdisciplinary collaborative depression care model that integrates an evidence-based psychosocial intervention into community-based home care settings for medically disabled homebound elderly. The data provide promising findings that may improve the provision of depression care for homebound elderly patients diagnosed with heart disease. The brief, low cost, and reimbursable features of the depression care service model make it especially appealing to home healthcare settings across the nation.

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