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Patricia Arean
Mark Hegel
Steven D Vannoy
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Patricia Arean, PhD,[1] Mark Hegel, PhD,[2] Steven Vannoy, PhD,[3] Ming-Yu Fan, PhD,[3] and Jurgen Unuzter[3]

Purpose: We compared a primary-care-based psychotherapy, that is, problem-solving therapy for primary care (PST-PC), to community-based psychotherapy in treating late-life major depression and dysthymia. **Design and Methods:** The data here are from the IMPACT study, which compared collaborative care within a primary care clinic to care as usual in the treatment of 1,801 primary care patients, 60 years of age or older, with major depression or dysthymia. This study is a secondary data analysis (n = 433) of participants who received either PST-PC (by means of collaborative care) or community-based psychotherapy (by means of usual care). **Results:** Older adults who received PST-PC had more depression-free days at both 12 and between 12 and 24 months (β = 47.5, p < .001; β = 47.0, p < .001), and they had fewer depressive symptoms and better functioning at 12 months (β_{dep} = –0.36, p < .001; β_{func} = –0.94, p < .001), than those who received community-based psychotherapy. We found no differences at 24 months. **Implications:** Results suggest that PST-PC as delivered in primary care settings is an effective method for treating late-life depression.

Key Words: Depression, Geriatrics, Primary care, Psychotherapy

Studies show that depression in late life is a costly and debilitating condition (Unutzer et al., 2002;

Unutzer, Simon, Pabiniak, Bond, & Katon, 2000). Depression is also a common disorder in primary care medicine settings, with as many as 10% of older primary care patients suffering from major depression or dysthymia (Arean & Alvidrez, 2001; Hoyert, Freedman, Strobino, & Guyer, 2001; Mojtabai & Olfson, 2004). Depression in late life is treatable with antidepressant medication and psychotherapy (Charney et al., 2003). Unfortunately, very few older adults have access to depression interventions (Bartels et al., 2004; Unutzer et al., 2002), particularly psychotherapy (Crystal, Sambamoorthi, Walkup, & Akincigil, 2003). Underutilization of psychotherapy is largely driven by the fact that the majority of older adults seek help for their depressive symptoms in primary care medicine (Arean & Miranda, 1996; Arean & Unutzer, 2003; Currin & Pearl, 1998). Although most older adults prefer to be treated for depression in primary care medicine (Arean & Miranda), they also tend to express an initial preference for psychotherapy (Gum et al., 2006), which is not typically available in primary care settings.

Because older adults are more likely to seek mental health services in primary care medicine (Arean & Miranda, 1996), a growing number of health care settings, such as the Veterans Affairs (VA) system and health maintenance organizations (HMOs), are beginning to provide brief mental health treatment within primary care. A dilemma faced by these settings is that even the briefest interventions (such as cognitive behavioral therapy) were not designed with the primary care setting or patient in mind. Primary care settings are not designed for visits longer than 30 minutes, and they do not typically employ staff with mental health expertise. Problem-solving therapy for primary care (PST-PC; Mynors-Wallis, Gath, Lloyd-Thomas, & Tomlinson, 1995) is a psychotherapeutic intervention created specifically to address the time and resource issues present in primary care medicine; it is a brief intervention, lasting between four and

eight sessions, and is adapted so that non-mental-health providers can learn to administer the intervention. According to the protocol, monthly group meetings for patients who respond to treatment can also be provided. Research finds that PST-PC is as effective as antidepressant medication in treating major depression in younger primary care patients (Mynors-Wallis et al., 1995; Mynors-Wallis, Gath, Day, & Baker, 2000), and traditional forms of PST (Arean et al., 1993) have been found to be effective in treating depression in older adults (Alexopoulos, Raue, & Arean, 2003; Arean et al.; Charney et al., 2003; Kendrick et al., 2005; Mynors-Wallis et al., 2000). However, PST-PC has not been investigated in older primary care patients with major depression, and it has not been compared with psychotherapy that older adults would typically receive from community providers.

Our purpose in this study is to compare a primary-care-based psychotherapy, namely PST-PC, to community-based psychotherapy in treating depression in older, primary care patients. In this study, community-based psychotherapy includes counseling or psychotherapy that is available to older adults who receive primary care in the VA system, HMO system, private provider organizations, and the county health care system. Because PST-PC has been adapted for medical patients and is tailored to the preferences and needs of these patients, and because the treatment is integrated into the patient's primary source of health care, we hypothesize that people treated with PST-PC will have better depression and functional outcomes than people treated with community-based psychotherapy. To test this hypothesis, we ran two analyses; one included participants who were also treated with and without medication, and one excluded everyone who received antidepressant medications.

Methods

The IMPACT Study Protocol

We derive the data for this study from the Improving Mood–Promoting Access to Collaborative Treatment (IMPACT) study (Unutzer et al., 2002). The IMPACT study is a multisite, randomized trial comparing a primary-care-based collaborative care model with usual care in primary care. The study was conducted in seven study sites in five states, representing eight different health care organizations and 18 primary care clinics. The primary purpose of this study was to compare the integration of depression treatment in primary care medicine to the typical care most older primary care patients currently receive (usual care) on depression outcomes, functional outcomes, access to care, and cost of care. Participants in the parent study were randomized at the individual level to receive either collaborative care or usual care and were evaluated at baseline, 6 months, 1 year, 18

months, and 24 months. Treatment in collaborative care was available to participants for 1 year; after the 1-year period, participants were free to access usual care. As part of the intervention arm of the study, participants in the protocol had the option of choosing among three treatment options: watchful waiting (monthly phone contact with no active treatment), antidepressant medication management, or brief psychotherapy (PST-PC). Participants in the usual care arm of the study also had the option of no treatment, antidepressant medication, or community-based psychotherapy. Data for this article represent the subset of participants who received psychotherapy as part of their participation in the trial. From this point on, we refer to the two comparison groups as PST-PC and community-based psychotherapy, or CBP. Details about the participants and study methods follow.

Participants

Recruitment and Consent.—Researchers recruited primary care patients who were 60 years or older from 18 diverse primary care clinics in six cities (five states). Participants were recruited either through provider referral, clinic screening, or by mail. Participants who were interested in participating were explained the study procedures by a research assistant who was trained to provide quality informed consent by the study-coordinating center (University of California at Los Angeles). All participants signed written informed consent forms approved by the Institutional Review Boards at the study-coordinating center and all study sites.

Sample Size.—Researchers randomized 1,801 primary care patients with major depression or dysthymia to collaborative care or usual care; all patients spoke English. There were 269 participants in the collaborative care arm who received PST-PC, and 85 received PST-PC only (no antidepressant medications). In the usual care arm, 164 participants received CBP, of whom 46 had no medication in addition to psychotherapy. Therefore, a total of 433 participants received psychotherapy, and of those 131 received psychotherapy only. For the purposes of this article, we analyze both subgroups, those who received both psychotherapy and antidepressant medication ($n = 433$) and those who received psychotherapy only ($n = 131$). For a detailed description of recruitment, screening, and sampling strategies, see the article by Unutzer and colleagues (2000). Subject flow is presented in Figure 1.

Sample Characteristics.—A majority of the subsample was White; 23% identified themselves as being ethnic minority; the average age for the sample was 71 years; 69% were female; and 14% had less than a high school education. Independent *t* tests
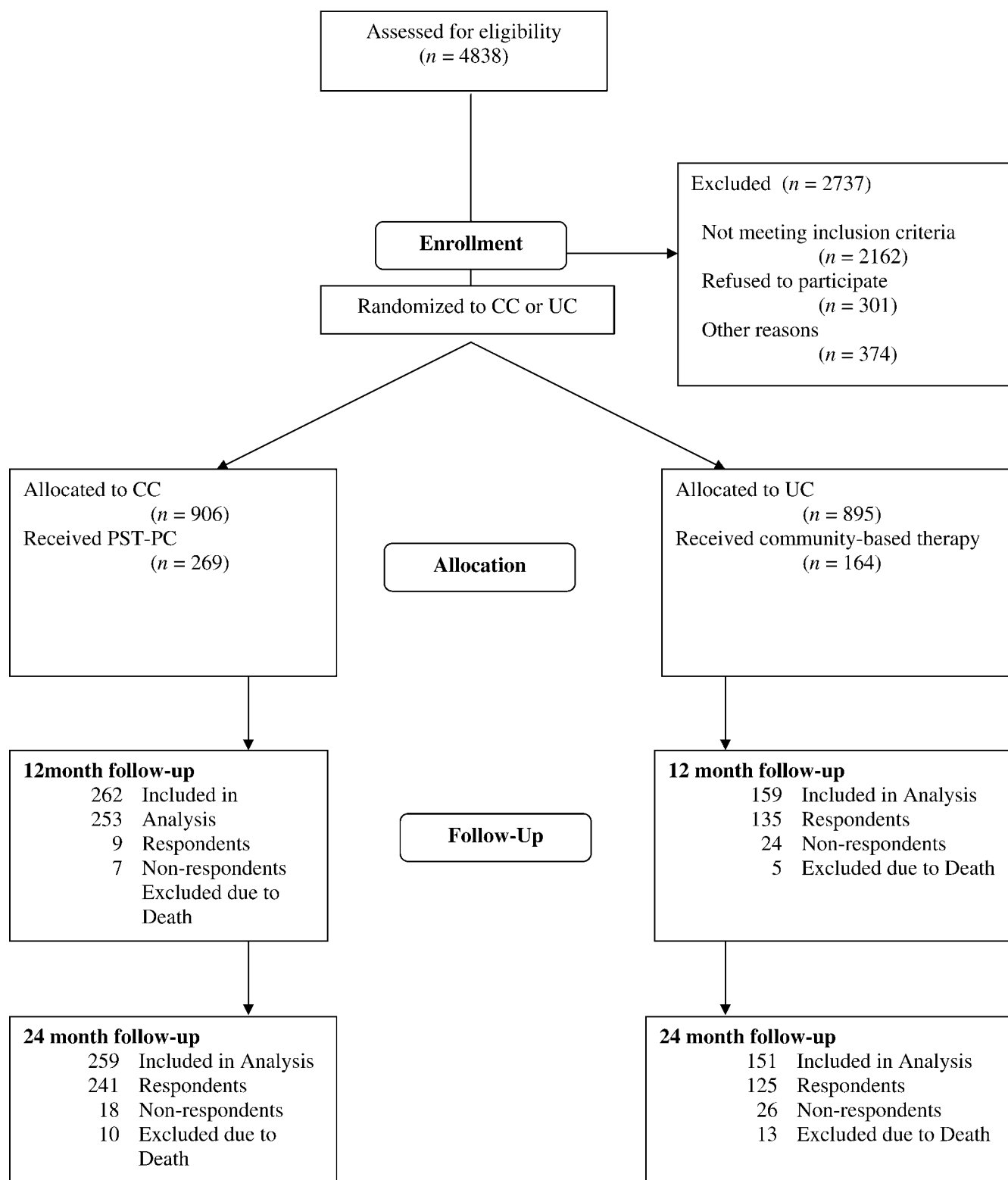
Figure 1. Randomization and sample selection (PST-PC = problem-solving therapy for primary care; CC = collaborative care; UC = usual care).

revealed no significant differences between groups on clinical characteristics at baseline. The groups did differ in the proportion of ethnic minorities and women (the CBP group had more minorities and women), and the CBP group was slightly older than the PST-PC group (71 vs 70 years of age). We controlled for these baseline differences in the data analyses (see Table 1).

Table 1. Baseline Characteristics Between PST-PC and CBP Groups

Baseline Characteristics	PST-PC (*n* = 269)		CBP (*n* = 164)		*p*
Age: *M* (*SD*)	70.0 (7.0)		71.6 (7.6)		.029
Minority: % (*n*)	16	(42)	24	(40)	.024
Gender: % (*n*)	68	(184)	71	(116)	.610
Education: % (*n*)					
Less than HS	12	(32)	16	(27)	.184
HS graduate	20	(53)	19	(31)	
Some college	39	(104)	43	(71)	
College graduate	30	(80)	21	(35)	
Married–living with partner: % (*n*)	45	(122)	51	(83)	.288
MH treatment, past 3 months: % (*n*)	14	(38)	20	(33)	.102
AD use, past 3 months: % (*n*)	37	(99)	48	(79)	.020
No. of chronic conditions: *M* (*SD*)	3.7 (1.9)		3.7 (1.9)		.950
Baseline HSCL: *M* (*SD*)	1.7 (0.6)		1.8 (0.6)		.197
Baseline SDS: *M* (*SD*)	4.4 (2.4)		4.7 (2.4)		.190

Note: PST-PC = problem-solving treatment for primary care; CBP = community-based psychotherapy; HS = high school; AD = antidepressant; MH = mental health; HSCL = Hopkins Symptom Checklist for depression severity; SDS = the Sheehan Disability Screen.

Interventions: PST-PC.—Participants who were treated with PST-PC received a combination of patient education about depression, care coordination, and psychotherapy. Psychoeducation consisted of a 20-minute video and written information about late-life depression. The patients also met with a depression care specialist (DCS) in the primary care clinic, who was typically a nurse, social worker, or a psychologist trained in PST-PC (Hegel, Dietrich, Seville, & Jordan, 2004). The DCS collected psychosocial information on the patients, discussed the educational materials, and discussed treatment options for depression. On the basis of patient preference, the DCS then supported the patients in the use of antidepressant medications prescribed by their regular primary care provider or provided a course of PST-PC. PST-PC consists of four to six sessions. The initial visit was 1 hour long, in which the DCS provided an overview of depression, explained the rationale behind PST-PC, and established rapport. Each subsequent visit was approximately 30 minutes in length, in which the DCS reviewed problems solved since the last visit and assisted patients in using the problem-solving format. Visits were delivered every other week. If participants responded to treatment, then they were eligible to participate in a monthly maintenance group; participation in the group was voluntary. The focus of PST-PC is to learn how to solve problems, so that the difficulties that are exacerbating depression can be dealt with effectively. There are seven steps that participants learn in treatment: how to define problems, how to set goals, brainstorming solutions, solution selection, solution implementation, review of the implemented plan, and activity scheduling (Hegel et al.).

PST-PC was only available to participants in the first year following randomization. Thus, in the second year of the study, those who received PST-PC had access to community psychotherapy.

Interventions: Therapist Training in PST-PC.— There were 11 DCSs (8 clinical nurse specialists, 2 clinical psychologists, and 1 social worker) who were trained in PST-PC by two licensed clinical psychologists who are expert in the use of this therapeutic model. Training consisted of a provision of a treatment manual, as well as a daylong workshop to introduce the principles of PST-PC and to role-play the intervention. Shortly thereafter, DCSs identified between three and five training cases. The first, third, and last sessions of PST-PC were recorded for each training case and were reviewed by the two trainers. The trainers assessed adherence to PST (if therapists administered PST as planned) and competence (therapist skill in delivering PST-PC) by using the Problem Solving Treatment Provider Adherence Checklist (Hegel et al., 2004). After DCSs demonstrated proficiency on the checklist, they were considered certified in the use of PST-PC. DCSs reviewed all their patients with a study psychiatrist on a weekly basis to monitor treatment outcome, and they participated in a monthly supervision call with the PST-PC trainers and the Principal Investigator for the IMPACT study. The Patient Health Questionnaire–9 (Kroenke, Spitzer, & Williams, 2001) was completed at each PST-PC session. We used the scores to track patient improvement over time and to inform treatment options for those patients who did not show improvement. Thus, ongoing consultation on PST-PC cases was an integral part of the intervention. Finally, to determine fidelity to treatment, we required DCSs to audiotape all their PST-PC sessions for review at random by the trainers. Average quality scores based on the problem solving treatment

provider adherence and competency (PSTPAC) were maintained at 4 for the entire study period.

Interventions: CBP.—Control subjects were encouraged to continue in care as usual. This could have been continuing care with their primary care provider and any mental health specialty provider of their choosing, or not receiving any mental health treatment at all. No services were withheld from this group and the study team provided no special services. Counseling or psychotherapy provided to the usual care patients who elected to be treated with these services consisted of treatment they would normally have access to through their health plans. The health plans represented in this study employ masters- to doctoral-level clinicians trained in psychotherapy. Of the eight study sites, two study sites were VA sites, four sites were group model HMOs, one site was a county hospital with a mental health outpatient service, and the final site was a preferred provider organization.

Further, the patients included in the analyses are those who indicated that they received psychotherapy or counseling from a social worker, psychologist, or any other mental health provider. Although the quality of the therapy and therapists are likely to vary, they are also likely to represent the typical psychotherapy older adults would encounter in the community. Patients in CBP reported having received psychotherapy, but no information as to the specific type of psychotherapy was collected by the study. We suspect that the type of therapy received was fairly representative of the psychotherapy available in the diverse communities from which our study participants were recruited and represent a mix of eclectic therapy, CBT, psychodynamic therapy, and supportive therapy (Halpern, Johnson, Miranda, & Wells, 2004; Kavanagh, Littlefield, Dooley, & O'Donovan, 2007; Olfson & Pincus, 1994a, 1994b, 1994c; Olfson, Pincus, & Dial, 1994). However, it is important to note that this study is not a comparison of PST-PC versus any specific therapy, but a comparison of PST-PC versus counseling-based services that older adults are likely to encounter in the communities in which they reside.

Data Collection

Data reported here are from baseline and from 12-month and 24-month follow-up interviews. Baseline data were collected before randomization by trained interviewers using a computer-assisted interview. A telephone survey research group conducted blind follow-up interviews at both time periods. Overall response rates were 83% at 12 months and 77% at 24 months.

Measures

In addition to information on demographics, we also collected data on clinical diagnosis (baseline only), depression severity (baseline and follow-up), functional impairment (baseline and follow-up), and service utilization (baseline and follow-up). To determine the participants' eligibility for inclusion, we had the Structured Clinical Interview for DSM-IV (SCID; J. B. Williams et al., 1992) administered at baseline. The SCID is a semistructured clinical interview that has been used widely in clinical trials. Intake clinicians administered the SCID and were trained by use of the SCID training tapes and inter-rater methods.

The Hopkins Symptom Checklist–20.—We assessed depression outcomes in two ways. One way was the severity of depression, and the other was the number of depression-free days over a period of time. We determined each outcome by using the Hopkins Symptom Checklist–20 (HSCL-20; Sheehan, Harnett-Sheehan, & Raj, 1996). The HSCL-20 incorporates the 13 items from the Hopkins Symptom Checklist Depression Scale and 7 additional items intended to more completely assess criterion symptoms and improve responsiveness. To calculate depression severity, the list rates each item on a 5-point scale, from 0 (not at all) to 4 (extremely), and the total score is computed as the average item response. Williams and colleagues (J. W. Williams, Stellato, Cornell, & Barrett, 2004) evaluated the HSCL-20 in a primary care population of depressed adults and reported good reliability (Cronbach's alpha = 0.86). In the present study, the HSCL-20 demonstrated good reliability, with Cronbach's alpha = 0.83.

Depression-Free Days.—We used the HSCL-20 scores measured at baseline and follow-up assessments to compute the main outcome for this study, which is the estimated number of depression-free days (DFDs) during the 12-month and 24-month follow-up periods. The purpose of estimating DFDs is to put statistical measures of outcomes into a clinically meaningful context. Estimating DFDs from depression severity scores has been used in several trials of depression treatment as a means of determining clinical significance (Araya, Flynn, Rojas, Fritsch, & Simon, 2006; Ciechanowski et al., 2006; Lave, Frank, Schulberg, & Kamlet, 1998; Liu et al., 2003; Lynch et al., 2005; Mallick, Chen, Entsuah, & Schatzberg, 2003; Montgomery & Andersen, 2006; Pyne, Tripathi, Williams, & Fortney, 2007; Revicki et al., 2005; Simon et al., 2001, 2002; Trivedi et al., 2004). Further, DFDs are directly related to quality-adjusted life years, and thus they can also serve as a measure of improvement in quality of life (Pyne et al.; Shanti & Tripathi, 2004). We calculate DFDs by using linear interpolation to estimate the daily depression severity across

assessment points, baseline, 3 months, 6 months, 12 months, 18 months, and 24 months in this study (Lave et al.).

We considered days with HSCL-20 scores below 0.5 to be fully depression free; we assigned days with scores between 0.5 and 1.7 a score between 0 and 1; and we considered scores above 1.7 to make zero contribution to the DFD estimate (they are fully depressed days). We estimated DFDs between two consecutive assessments by multiplying the average of the two DFDs scores by the number of days during the interval. For example, a participant whose HSCL-20 score at baseline and 3 months was converted to 0.1 and 0.9 on the DFD scale, respectively, would yield 45 (the average of 0.1 and 0.9 times 90 days) DFDs in the 0- to 3-month interval. We then summed the DFDs of the 0- to 3-month, 4- to 6-month, and 7- to 12-month intervals to yield the total DFDs during the 12-month period. We derived the 0- to 24-month DFDs by adding the DFDs of the 13- to 18-month and 19- to 24-month intervals to the 0- to 12-month DFDs. Estimates of DFDs have been reported using the Hamilton Depression Rating Scale, the Beck Depression Inventory, and the HSCL-20. No standards exist for establishing scale cutoffs for the interpolation process. We adapted our HSCL-20 thresholds for computing DFDs from the research by Simon and colleagues (2002). In their article, they reported 0.5 and 2.0 as the thresholds for "one" DFD and zero DFD, respectively. We used an upper cutoff point of 1.7, the mean baseline HSCL-20 score of IMPACT participants, to better reflect this sample's reported depression severity, all of whom met SCID criteria for major depression or dysthymic disorder at the time of study entry.

Sheehan Disability Assessment Scale.—We used the Sheehan Disability Assessment Scale (Sheehan et al., 1996) to determine functional impairment. This is a brief, analog disability scale, which uses visual-spatial, numeric, and verbal anchors. The scale has been validated in medical and psychiatric populations with a variety of psychiatric diagnoses (Leon, Olfson, Portera, Farber, & Sheehan, 1997; Sheehan et al.). The scale has been used in depressed medical patients and has been found sensitive to change following patients' antidepressant treatment (Franchini, Zanardi, Gasperini, & Smeraldi, 1999; Unutzer, Simon, Belin, et al., 2000).

Service Utilization

We determined the use of psychotherapy and medication in two ways. At all assessment times, patients in both conditions were asked, "in the past 3 months, have you seen a psychologist, social worker, or counselor for therapy for depression?" If the participants responded "yes," then they were then asked the number of times they saw this counselor in

the past 3 months. We included participants who responded yes to the initial question in this analysis. Although self-reported use of services has historically been considered a biased method of determining service use (Marshall, Grayson, Jorm, & O'Toole, 2001), recent research has found that this method of determining service utilization is in fact reliable, when it is compared with claims data (Wallihan, Stump, & Callahan, 1999). However, it is limited in the degree to which one can determine the type and quality of service provided, and we were not able to determine what type of psychotherapy (CBT vs IPT; family vs individual) the participants in the usual care arm had access to, or the type of provider that the participants saw.

Statistical Methods

Descriptive statistics of the demographic variables as well as baseline, 12-month, and 24-month outcome measures are provided. We performed an analysis of variance and chi-square tests to compare the continuous and categorical variables, respectively, between the PST-PC and CBP groups. We used multiple linear regression models to compare the effect of PST-PC to the effect of psychotherapy for CBP participants on DFDs, HSCL-20 scores, and functioning, after we adjusted for use of medication, baseline HSCL-20 score, organization that delivered the treatment, the method of recruitment, age, gender, ethnicity, education, and marital status. We used similar models on the smaller sample in which participants did not use any antidepressants during the 12-month period. We also compared the 12- and 24-month outcomes between the PST-PC patients who elected to participate in maintenance PST-PC and the PST-PC participants who did not elect to participate. Only those PST-PC participants who showed greater than 50% improvement in the Patient Health Questionnaire measure at the fourth or later PST-PC sessions were eligible for this analysis. In order to explore the differences between intervention participants who selected PST-PC and those who did not, we also compared the baseline demographic variables and baseline, 12-month, and 24-month outcome variables between these two groups. We again performed an analysis of variance and chi-square tests for comparing continuous and categorical variables, respectively.

The Pearson correlation coefficients among different outcomes measured at 12 months and 24 months are also provided. In addition, we examined the association between the number of PST-PC sessions in the first 12 months and the 12- and 24-month outcomes by using linear regression models.

We performed all of our analyses with Stata 8.1 (Stata Corporation, College Station, TX) and SAS 9.1 (SAS Institute Inc., Cary, NC).

Results

Access, Number of Sessions, and Antidepressant Medication Use

To clarify the use of psychotherapy in this study, here we report the rates of psychotherapy access in the larger sample, the number of psychotherapy sessions used in PST-PC and CBP within the first 12 months of randomization and then in the last 12 months (24-month follow-up), and antidepressant medication use. First, we found that participants in the collaborative care arm, who were offered PST-PC, had a greater uptake of psychotherapy than did participants in the usual care arm, who were offered CBP (29.7% vs 18.3%).

Second, participants who received PST-PC used an average of 6.4 sessions in the first year, and participants who received CBP had an average of 6.0 sessions in the first year. The difference is not statistically significant. In the second year, however, participants who received PST-PC had an average of 0.8 psychotherapy sessions, whereas the participants who received CBP had an average of 2.7 sessions. The number of psychotherapy sessions over time was not related to DFDs ($\beta = 0.77$, ns), depression severity ($\beta = 0.01$, ns), or functioning ($\beta = -0.04$, ns).

Third, because of the differences in accessibility of treatment between the two study groups, we looked for differences in psychotherapy visits across the five assessment periods. Our analyses revealed no significant differences in the number of visits in each 3-month assessment interval between the two study groups in the first year. However, between Months 12 and 24 of the study (the follow-up period), the CBP participants received significantly more psychotherapy visits than did the PST-PC participants (see Table 2). Given the short assessment window (3 months), and the fact that there were no differences in the number of visits, the data suggest that there was no significant difference in how long participants waited before engaging in treatment.

Finally, because some participants were also treated with antidepressant medication, we elected to determine if there was any significant difference between the two treatment conditions on the use of these medications. There were no differences in medication use between the two groups, either at 12 or 24 months (see Table 2).

Generalizability of the Sample: Differences in Participants Who Selected Psychotherapy Versus Those Who Did Not

To further describe our sample, we ran analyses to determine whether there were any baseline differences between IMPACT study participants who selected psychotherapy as their choice of depression treatment and those participants who did not. As

Table 2. Use of Services

Process Variables	PST-PC		CBP		p
Total MH visits: M (SD)					
0–3 months	2.3	(3.5)	1.9	(2.9)	0.162
4–6 months	1.6	(2.8)	1.1	(2.9)	0.05
7–12 months	2.5	(4.0)	3.2	(5.9)	0.112
0–12 months	6.4	(7.0)	6.0	(7.4)	0.640
13–18 months	0.5	(1.9)	1.1	(3.7)	0.052
19–24 months	0.3	(1.5)	1.7	(10.5)	0.043
13–24 months	0.8	(2.4)	2.7	(12.2)	0.019
AD use: % (count)					
0–12 months	65	(174)	72	(118)	0.144
13–24 months	55	(143)	58	(90)	0.489

Note: PST-PC = problem-solving treatment for primary care; CBP = community-based psychotherapy; MH = mental health; AD = antidepressant; SD = standard deviation.

stated in Table 1, the only differences we found between CBP and PST-PC participants was age and ethnicity, both of which we controlled for in the longitudinal analyses. For participants in usual care, the only baseline difference between those who chose psychotherapy and those who did not was that those who selected psychotherapy were more depressed than those who did not. In the collaborative care group, we found that those who selected PST-PC were more likely to be White, have a higher education, and to be less disabled than those who did not select PST-PC (see Table 3).

PST-PC Compared With Community Psychotherapy: Sample With and Without Medication Management

The results from this analysis revealed that participants who received PST-PC had better depression outcomes than did participants who received CBP. After adjusting for use of medication, baseline HSCL score, and baseline characteristics (age, gender, race, education, marital status, and site), we found that PST-PC participants had more DFDs at 12 months ($\beta = 47.54$, $p < .001$) and between 12 and 24 months ($\beta = 47.02$, $p < .001$) than did the participants who received community counseling. Over the 2-year period, those participants who received PST-PC had significantly more DFDs than those who received CBP ($\beta = 94.56$, $p < .001$). In addition, participants who received PST-PC had fewer depression symptoms at 12 months than did participants in CBP ($\beta = -0.36$, $p < .001$). However, these differences no longer remained significant at 24 months ($\beta = -0.05$, $p = .420$), as participants in CBP eventually reported having as few depressive symptoms as those who received PST-PC (see Table 4). It should be noted here that depression severity and DFDs are highly related to one another ($r = -.79$ at 12 months, $r = -.74$ at 24 months).

Table 3. Demographic Differences Between Treatment Modalities

Baseline Characteristics	Collaborative Care Participants			Usual Care Participants		
	PST-PC	No PST-PC	p	CBP	No CBP	p
Age: M (SD)	70.0 (7.0)	71.4 (7.5)	.010	71.6 (7.6)	71.3 (7.6)	.621
Minority: % (n)	16 (42)	24 (155)	.004	24 (40)	24 (175)	.903
Gender: % (n)	68 (184)	62 (397)	.081	71 (116)	64 (471)	.125
Education: % (n)						
Less than HS	12 (32)	23 (145)	<.001	16 (27)	19 (142)	.178
HS graduate	20 (53)	23 (146)		19 (31)	24 (179)	
Some college	39 (104)	32 (205)		43 (71)	35 (256)	
College graduate	30 (80)	22 (141)		21 (35)	21 (154)	
Married–living with partner: % (n)	45 (122)	44 (279)	.667	51 (83)	48 (351)	.548
AD use, past 3 months: % (n)	37 (99)	46 (292)	.012	48 (79)	41 (301)	.101
No. of chronic conditions: M (SD)	3.7 (1.9)	3.8 (2.0)	.533	3.7 (1.9)	3.8 (1.9)	.595
Baseline HSCL: M (SD)	1.7 (0.6)	1.7 (0.6)	.126	1.8 (0.6)	1.6 (0.6)	.003
Baseline SDS: M (SD)	4.4 (2.4)	4.8 (2.7)	.015	4.7 (2.4)	4.6 (2.6)	.603

Note: PST-PC refers to Problem Solving Treatment for Primary Care. CBP refers to Community Based Psychotherapy. PST-PC = problem-solving treatment for primary care; CBP = community-based psychotherapy; HS = high school; AD = antidepressant; HSCL = Hopkins Symptom Checklist for depression severity; SDS = the Sheehan Disability Screen. Note; *SD* = standard deviation.

Results for functional outcomes were similar. Participants who received PST-PC had better functional outcomes at 12 months than those who received CBP ($\beta = -0.94$, $p < .001$), but these differences were no longer present at 24 months ($\beta = -0.04$, $p = .873$). As is typical in other depression studies, depression severity and functioning are highly related to one another ($r = .55$ at 12 months, $r = .53$ at 24 months), as are DFDs and functioning ($r = -.48$ at 12 months, $r = -.40$ at 24 months; see Table 5).

PST-PC Compared With CBP: Sample With No Medication Management

The results on this subgroup of participants were similar to those detailed herein. Participants who received only PST-PC had more DFDs at 12 months ($\beta = 98.0$, $p < .001$) and 24 months ($\beta = 182.3$, $p < .001$) than did participants who received only CBP. Likewise, PST-PC participants also had fewer depression symptoms at ($\beta = -0.53$, $p < .001$) and better functional outcomes ($\beta = -1.33$, $p = .006$) at 12 months, but no differences were evident at 24 months (see Table 4).

Effects of Maintenance PST-PC on 24-Month Outcomes

There were 184 participants who were eligible for maintenance PST-PC, of which 75 elected to participate. As we already stated, maintenance PST-PC was offered to participants who had made a significant recovery from depression after receiving a course of PST-PC. Those who elected to participate in maintenance PST-PC did not differ on baseline or posttreatment characteristics from those who did not elect to participate. The results indicate that those who participated in maintenance PST-PC had no additional effect on depression and functioning at 12 months or 24 months.

Discussion

The results from this study yield a number of interesting findings regarding the provision of psychotherapy in primary care for major depression and dysthymia in older primary care patients. First, to our knowledge, this is the first reported data suggesting that major depression in older adults can be successfully treated with PST-PC, a brief therapy model tailored for delivery in the primary care setting. Second, the analysis indicates that PST-PC results in significantly greater access to psychotherapy and better outcomes at 12 months than psychotherapy available in the community on both depression and functional measures. Third, the data suggest that although depression and functional outcomes improve for participants who receive CBP over time, so that there was no significant difference between groups at 24 months, improvement in depression occurred sooner in the PST-PC group than it did in the CBP group, even though treatment began at similar times in the course of the first year of treatment.

It is common for outcome comparisons to be conducted as a cross-sectional comparison (i.e., evaluating only the difference on the outcome measure at a particular point in time). Our analysis, using the estimated parameter of DFDs, illustrates that a treatment that produces a quicker response may have a profound effect on patient well-being. Although there was no significant difference between depression scores at 24 months, the PST-PC

Table 4. Regression Analyses on 12- and 24-Month Outcomes (All Study Participants)

Outcome Measures	Variables	12-Month Outcome			24-Month Outcome			0–24 Months (DFD only)		
		β	p	95% CI	β	p	95% CI	β	p	95% CI
DFDs	Intercept	399.86	<.001	276.8–522.9	451.36	<.001	304.0–598.8	851.23	<.001	599.2–1103.3
	PST-PC–CBP	47.54	<.001	28.4–66.7	47.02	<.001	24.1–70.0	94.56	<.001	55.3–133.8
	medication	−25.73	.014	−46.2– −5.2	−19.02	.128	−43.6–5.5	−44.75	.037	−86.7– −2.8
	Baseline HSCL	−76.45	<.001	−93.9– −59.0	−61.06	<.001	−81.9– −40.2	−137.52	<.001	−173.2– −101.8
	Site 2	−46.44	.093	−100.6–7.7	−55.79	.092	−120.7–9.1	−102.23	.071	−213.2–8.7
	Site 3	−35.00	.231	−92.4–22.4	−35.31	.313	−104.1–33.4	−70.31	.240	−187.9–47.3
	Site 4	−65.24	.020	−120.1– −10.3	−49.65	.139	−115.4–16.1	−114.89	.045	−227.4– −2.4
	Site 5	−20.15	.442	−71.6–31.3	−43.19	.169	−104.8–18.4	−63.34	.238	−168.7–42.0
	Site 6	−17.58	.501	−68.9–33.8	−19.68	.530	−81.2–41.8	−37.27	.487	−142.5–67.9
	Site 7	−18.71	.470	−69.6–32.2	−33.87	.276	−94.9–27.1	−52.58	.322	−156.9–51.7
	Site 8	−21.60	.369	−68.8–25.6	−41.72	.148	−98.3–14.8	−63.33	.199	−160.0–33.4
	Recruitment	2.74	.825	−21.6–27.1	2.59	.861	−26.6–31.7	5.33	.834	−44.5–55.2
	Age	−1.73	.010	−3.0– −0.4	−2.91	<.001	−4.5– −1.3	−4.65	<.001	−7.3– −2.0
	Gender	7.75	.519	−15.9–31.4	0.47	.974	−27.8–28.8	8.21	.739	−40.2–56.6
	Ethnicity	12.11	.355	−13.6–37.8	37.45	.017	6.6–68.3	49.56	.065	−3.1–102.2
	HS	2.66	.876	−30.9–36.2	−5.95	.772	−46.2–34.3	−3.29	.925	−72.1–65.5
	Some college	14.30	.383	−17.9–46.5	16.72	.394	−21.8–55.3	31.02	.355	−34.9–96.9
	College graduate	32.65	.068	−2.5–67.8	31.02	.148	−11.0–73.1	63.67	.083	−8.3–135.6
	Marital status	0.38	.969	−19.1–19.8	−0.12	.992	−23.4–23.2	0.26	.990	−39.6–40.1
Depression severity	Intercept	−0.14	.741	−1.0–0.7	−0.19	.657	−1.0–0.7			
	PST-PC–CBP	−0.36	<.001	−0.5– −0.2	−0.05	.420	−0.2–0.1			
	medication	0.09	.239	−0.1–0.2	0.17	.018	0.0–0.3			
	Baseline HSCL	0.40	<.001	0.3–0.5	0.38	<.001	0.3–0.5			
	Site 2	0.27	.160	−0.1–0.6	0.09	.629	−0.3–0.5			
	Site 3	0.16	.415	−0.2–0.6	0.03	.882	−0.4–0.4			
	Site 4	0.36	.064	−0.0–0.7	−0.01	.945	−0.4–0.4			
	Site 5	0.01	.964	−0.3–0.4	0.04	.807	−0.3–0.4			
	Site 6	0.09	.628	−0.3–0.4	−0.15	.381	−0.5–0.2			
	Site 7	0.09	.629	−0.3–0.4	0.03	.857	−0.3–0.4			
	Site 8	0.13	.425	−0.2–0.5	−0.02	.889	−0.3–0.3			
	Recruitment	0.04	.668	−0.1–0.2	−0.10	.216	−0.3–0.1			
	Age	0.01	.012	0.0–0.0	0.01	.002	0.0–0.0			
	Gender	0.03	.705	−0.1–0.2	−0.04	.613	−0.2–0.1			
	Ethnicity	−0.13	.137	−0.3–0.0	−0.24	.007	−0.4– −0.1			
	HS	−0.07	.548	−0.3–0.2	0.01	.930	−0.2–0.2			
	Some college	−0.09	.412	−0.3–0.1	−0.04	.703	−0.3–0.2			
	College graduate	−0.22	.074	−0.5–0.0	−0.13	.298	−0.4–0.1			
	Marital status	0.05	.468	−0.1–0.2	0.01	.917	−0.1–0.1			
Disability	Intercept	−0.31	.842	−3.4–2.8	1.71	.265	−1.3–4.7			
	PST-PC–CBP	−0.94	<.001	−1.4– −0.4	0.04	.873	−0.4–0.5			
	medication	0.47	.083	−0.1–1.0	0.53	.043	0.0–1.1			
	Baseline SDS	0.40	<.001	0.3–0.5	0.35	<.001	0.3–0.5			
	Site 2	2.32	.001	0.9–3.7	−0.55	.427	−1.9–0.8			
	Site 3	0.52	.492	−1.0–2.0	−0.23	.753	−1.6–1.2			
	Site 4	2.01	.005	0.6–3.4	0.42	.546	−0.9–1.8			
	Site 5	0.92	.175	−0.4–2.2	0.04	.946	−1.2–1.3			
	Site 6	0.68	.312	−0.6–2.0	−1.04	.108	−2.3–0.2			
	Site 7	0.63	.347	−0.7–1.9	−0.26	.686	−1.5–1.0			
	Site 8	0.69	.268	−0.5–1.9	−0.98	.101	−2.2–0.2			
	Recruitment	0.09	.782	−0.5–0.7	−0.07	.835	−0.7–0.6			
	Age	0.03	.135	−0.0–0.1	0.02	.233	−0.0–0.1			
	Gender	−0.45	.147	−1.1–0.2	−0.16	.599	−0.8–0.4			
	Ethnicity	−0.53	.120	−1.2–0.1	−1.03	.002	−1.7– −0.4			
	HS	0.89	.044	0.0–1.8	−0.03	.940	−0.9–0.8			
	Some college	0.39	.367	−0.5–1.2	−0.32	.449	−1.1–0.5			
	College graduate	−0.11	.819	−1.0–0.8	−0.14	.749	−1.0–0.7			
	Marital status	0.05	.853	−0.5–0.6	0.17	.492	−0.3–0.7			

Note: DFD = Depression-free day; CI = confidence interval; PST-PC = problem-solving treatment for primary care; CBP = community-based psychotherapy; PST-PC–CBP = PST compared with CBP; HS = high school; HSCL = Hopkins Symptom Checklist for depression severity; SDS = the Sheehan Disability Screen.

Table 5. Regression Analyses on 12- and 24-Month Outcomes (Psychotherapy-Only Participants)

Outcome Measures	Variables	0–12 Month (DFD)			12–24 Month (DFD)			0–24 Month (DFD)		
		β	p	95% CI	β	p	95% CI	β	p	95% CI
DFDs	Intercept	348.84	.002	134.9–562.8	394.99	.003	139.6–650.4	743.83	.001	307.4–1180.3
	PST-PC–CBP	97.98	<.001	61.7–134.3	84.29	<.001	41.0–127.6	182.27	<.001	108.3–256.3
	Baseline SCL	−75.09	<.001	−106.1– −44.1	−57.14	.003	−94.2– −20.1	−132.24	<.001	−195.6– −68.9
	Site 2	−29.38	.452	−106.5–47.7	−19.94	.669	−112.0–72.1	−49.32	.536	−206.6–108.0
	Site 3	−55.47	.204	−141.4–30.5	−39.54	.447	−142.2–63.1	−95.01	.285	−270.4–80.4
	Site 4	−89.83	.038	−174.6– −5.0	−45.85	.371	−147.1–55.4	−135.68	.123	−308.7–37.3
	Site 5	14.84	.712	−64.6–94.2	−13.01	.786	−107.8–81.8	1.83	.982	−160.2–163.8
	Site 6	61.21	.140	−20.5–142.9	41.41	.402	−56.1–138.9	102.61	.225	−64.0–269.2
	Site 7	−7.10	.860	−86.9–72.7	−19.63	.684	−114.9–75.6	−26.73	.746	−189.6–136.1
	Site 8	−53.50	.152	−127.1–20.0	−34.74	.435	−122.6–53.1	−88.24	.247	−238.3–61.8
	Recruitment	−29.04	.172	−70.9–12.8	−22.70	.370	−72.7–27.3	−51.73	.233	−137.2–33.7
	Age	−1.51	.202	−3.8–0.8	−2.68	.059	−5.5–0.1	−4.19	.084	−8.9–0.6
	Gender	16.52	.432	−25.0–58.0	12.84	.609	−36.7–62.4	29.36	.494	−55.3–114.0
	Ethnicity	11.88	.612	−34.4–58.2	47.50	.091	−7.8–102.8	59.38	.216	−35.1–153.8
	HS	52.33	.082	−6.8–111.4	25.30	.479	−45.3–95.9	77.63	.205	−42.9–198.2
	Some college	16.93	.564	−41.0–74.8	10.81	.757	−58.3–79.9	27.74	.643	−90.4–145.8
	College graduate	45.40	.154	−17.2–108.0	28.92	.445	−45.8–103.7	74.32	.251	−53.4–202.0
	Marital status	−16.74	.367	−53.4–19.9	−26.10	.240	−69.8–17.7	−42.83	.259	−117.6–31.9
Depression severity	Intercept	−0.14	.862	−1.7–1.4	−0.61	.457	−2.2–1.0			
	PST-PC–CBP	−0.53	<.001	−0.8– −0.3	−0.08	.552	−0.3–0.2			
	Baseline SCL	0.40	<.001	−0.2–0.6	0.38	.001	0.2–0.6			
	Site 2	0.17	.514	−0.3–0.7	−0.06	.823	−0.6–0.5			
	Site 3	0.37	.215	−0.2–0.9	0.03	.929	−0.6–0.6			
	Site 4	0.67	.031	0.1–1.3	−0.07	.817	−0.7–0.5			
	Site 5	−0.07	.807	−0.6–0.5	−0.35	.211	−0.9–0.2			
	Site 6	−0.22	.428	−0.8–0.3	−0.40	.154	−1.0–0.2			
	Site 7	0.01	.964	−0.5–0.5	−0.10	.713	−0.7–0.4			
	Site 8	0.24	.344	−0.3–0.7	−0.36	.163	−0.9–0.1			
	Recruitment	0.16	.256	−0.1–0.4	0.10	.527	−0.2–0.4			
	Age	0.01	.207	−0.0–0.0	0.02	.020	0.0–0.0			
	Gender	0.05	.700	−0.2–0.3	0.01	.950	−0.3–0.3			
	Ethnicity	−0.13	.422	−0.4–0.2	−0.22	.181	−0.5–0.1			
	High school	−0.17	.404	−0.6–0.2	−0.15	.486	−0.6–0.3			
	Some college	0.12	.551	−0.3–0.5	−0.01	.959	−0.4–0.4			
	College graduate	−0.05	.808	−0.5–0.4	−0.19	.404	−0.6–0.3			
	Marital status	0.04	.752	−0.2–0.3	0.15	.257	−0.1–0.4			
Disability	Intercept	−2.69	.339	−8.3–2.9	0.33	.911	−5.5–6.1			
	PST-PC–CBP	−1.33	.006	−2.3– −0.4	0.25	.620	−0.8–1.3			
	Baseline SDS	0.33	<.001	0.1–0.5	0.29	.005	0.1–0.5			
	Site 2	1.90	.056	−0.1–3.8	−2.18	.034	−4.2– −0.2			
	Site 3	−0.13	.905	−2.3–2.0	−0.85	.457	−3.1–1.4			
	Site 4	3.43	.003	1.2–5.7	0.23	.849	−2.1–2.6			
	Site 5	0.19	.850	−1.8–2.2	−1.75	.109	−3.9–0.4			
	Site 6	−0.06	.957	−2.1–2.0	−2.83	.009	−4.9– −0.7			
	Site 7	−0.71	.500	−2.8–1.4	−1.75	.111	−3.9–0.4			
	Site 8	0.76	.433	−1.2–2.7	−2.55	.013	−4.5– −0.6			
	Recruitment	0.78	.153	−0.3–1.9	0.42	.470	−0.7–1.6			
	Age	0.06	.082	−0.0–0.1	0.05	.140	−0.0–0.1			
	Gender	−1.02	.058	−2.1–0.0	0.43	.438	−0.7–1.5			
	Ethnicity	−0.08	.894	−1.3–1.1	−1.14	.067	−2.4–0.1			
	HS	1.68	.028	0.2–3.2	0.61	.455	−1.0–2.2			
	Some college	1.10	.146	−0.4–2.6	0.21	.791	−1.4–1.8			
	College graduate	1.15	.157	−0.4–2.7	0.24	.780	−1.4–1.9			
	Marital status	0.04	.941	−0.9–1.0	0.06	.908	−0.9–1.0			

Note: DFD = Depression-free day; CI = confidence interval; PST-PC = problem-solving treatment for primary care; CBP = community-based psychotherapy; PST-PC–CBP = PST compared with CBP; HS = high school; HSCL = Hopkins Symptom Checklist for depression severity; SDS = the Sheehan Disability Screen.

participants had an estimated 95 additional DFDs, representing more than 3 months' worth of symptom relief during the evaluation period. Furthermore, this effect was nearly twice as large for participants who elected to receive only counseling (vs with antidepressant medication); in that case, the PST-PC participants experienced an additional 182 DFDs compared with CBP participants. Hence the nonsignificant difference in cross-sectional comparison of depression scores at 24 months should not be interpreted as an equivalent outcome. Finally, the data indicate that participation in monthly maintenance groups for PST-PC has no discernible effect on maintenance of treatment gains; improvement from PST-PC tends to be persistent over a 2-year period, with or without the monthly booster sessions. Finally, number of sessions in PST-PC does not affect treatment outcomes.

Clinical Implications

First, the implication that a very brief intervention delivered in primary care medicine can treat the symptoms and functional consequences of depression in older adults better than treatments delivered in the community is of some importance. PST-PC can be feasibly delivered in health care settings, the setting where older adults are likely to seek treatment for depression. It is also a relatively cost-effective intervention in that it can be delivered by existing health care providers within the primary care setting, provided they are given ample training and guidance. Furthermore, given that the effects of treatment appear to occur sooner in the course of treatment than they do in community-based settings, PST-PC may be an intervention of choice for older adults, either inside or outside the primary care setting.

We do acknowledge that the level of expert support that DCSs received around the delivery of PST-PC is more than that which is generally available to most therapists, and the differential treatment effects may be due in part to these differences in access to expert consultation. Research on decision support in psychotherapy has found that, even in community-based treatment, providing ongoing assessment of clinical outcomes and consultation for individuals who are not responding can substantially improve clinical outcomes in psychotherapy patients (Lambert, 2005). Unfortunately, these processes are not readily available to community therapists (Aegistadottir et al., 2006). The data from this study, coupled with recent findings about improving CBP outcomes, suggest that current standards of mental health care may be improved simply by supporting the use of guideline treatment and outcome monitoring. Thus, we anticipate that the community care outcomes may have occurred more rapidly if providers had the same degree of access to ongoing treatment monitoring and consultation as was available to the PST-PC specialists. Future research should clarify this issue by comparing PST-PC as it was delivered in this study to CBP that is enhanced with expert consultation and outcome monitoring.

A second implication from these findings is that once participants improve from the acute-phase treatment of PST-PC, ongoing monthly maintenance sessions do not influence the maintenance of treatment gains. These findings should be interpreted with caution, however. First, participation in maintenance PST-PC was voluntary, at the discretion of the participant and DCS. Although we found no significant baseline or postacute treatment differences between those who elected to participate in maintenance PST-PC and those who did not elect to participate, differences such as confidence in executing PST-PC without further guidance from the DCS may have been a factor that contributed to both the decision to participate and in ultimate treatment outcome. That is, those who did not attend maintenance groups may have felt quite comfortable with PST-PC, and those who did attend felt less secure in implementing the new skills.

In addition, all participants who received PST-PC were followed by their DCS monthly after acute treatment. It is possible that participants who did not attend the maintenance groups still received maintenance support from the DCS individually, thus diluting group differences. Future research should further elucidate the role that maintenance PST-PC has on treatment outcome by randomizing those who respond to acute PST-PC to maintenance PST-PC or no ongoing support.

Another important finding is the eventual lack of group difference between PST-PC and CBP at 24 months. The long-term effects of PST-PC begin to diminish whereas the long-term effects of CBP begin to improve. It is important to note a few things from these findings. Although the PST-PC group shows some increase in depression symptoms and functioning by 24 months, these symptoms never return completely to baseline levels, suggesting some overall sustained improvement over time. Although there is improvement in CBP by 24 months, the mean depression symptoms and functional outcomes never quite reach the level that was evident in PST-PC at 12 months. Further, increased improvement in CBP may be due to participants having used significantly more therapy sessions between 12 and 24 months of the study. Implications from this data suggest that PST-PC has strong, positive effects on depression acutely and during the year after treatment, but once support from a depression care manager is no longer available to continue the use of PST-PC, we eventually see relapse that is most common after discontinuation of treatment. Continued use of psychotherapy, as was found in the CBP group, resulted in improvements in depression and functioning over time.

Limitations

Although this is one of the first studies to our knowledge to compare primary-care-based psychotherapy to CBP, there are limitations that require mention to put this data into perspective. First, although participants were randomized to receive collaborative care in primary care or usual care, participants were not randomized to psychotherapies, and therefore this design is quasi-experimental rather than a true randomized trial, introducing some threats to internal validity. We found that those who select psychotherapy for the treatment of their depression may be different from those who select other forms of treatment. This study at a minimum provides information about the effectiveness of psychotherapy among patients who self-select for psychotherapy. Second, we did not have information as to the type of therapy CBP participants received; thus, we can only make interpretations based on the relative effects of PST-PC compared with psychotherapy that is available to patients with health plans represented in this study. Therefore, this study does not provide information about the relative effects of PST-PC compared with other evidence-based treatments; it provides information only about the effects of PST-PC compared to what is offered in these communities. A final limitation, which we already discussed, is the fact that PST-PC was delivered in the context of a broader care management program that included ongoing patient monitoring and consultation. Future research should therefore investigate the added effect of this support on the effects of psychotherapy for treating depression in older primary care patients.

Conclusions

Despite the methodological limitations of this study, the data presented here suggest that depression in older primary care patients can be successfully treated in the primary care setting by using therapies developed for these settings. In addition, access to expert consultation may also improve the quality of depression care for these patients. The long-term impact of these therapies, however, indicates that either ongoing support from a DCS or modifications to PST-PC are warranted to secure continued remission of depression. These promising data should provide the field with sufficient impetus to investigate the issues that this study raises: Does the quality of community-based care have to be improved to better address the treatment of depression in older primary care patients? What aspects of primary-care-based treatment (brief structured therapy or ongoing consultation) influence the quality of care for depressed older patients? This study is a first step in the process of improving depression psychotherapies for a majority of older people in need of care.

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