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Long-Term Effectiveness of Collaborative Depression Care in Older Primary Care Patients with and without PTSD Symptoms

Domin Chan, PhD, MHS¹, Ming-Yu Fan, PhD², and Jürgen Unützer, MD, MPH, MA²

¹National Asian Pacific Center on Aging, Seattle, WA, USA

²Department of Psychiatry and Behavioral Sciences, University of Washington School of Medicine, Seattle, WA, USA

Abstract

Objective—Depressed patients with comorbid posttraumatic stress disorder (PTSD) are more functionally impaired and may take longer to respond to depression treatment than patients without PTSD. This study examined the long-term effects of PTSD on depression severity, treatment response, and health care costs among older adults.

Methods—Patients were recruited from 18 primary care clinics in 5 states. A total of 1801 patients aged 60 years or older with major depression or dysthymia were randomized to IMPACT collaborative care or usual care. The study included 191 (10.6%) subjects who screened positive for PTSD. Depression severity, assessed by the Hopkins Depression Symptom Checklist, was used to estimate depression-free days (DFDs) over 24 months. Total health care costs included inpatient, outpatient, and pharmacy costs.

Results—Depressed patients with PTSD had higher depression severity than patients without PTSD symptoms at baseline. Over two years, intervention patients with PTSD symptoms had relatively the same benefits from collaborative care (99 more DFDs than usual care patients) as patients without PTSD (108 more DFDs than usual care) ($p=0.85$). Total health care costs did not differ significantly for depressed patients with and without PTSD symptoms.

Conclusion—Depressed older adults with PTSD symptoms were more depressed at baseline, but collaborative care (compared to usual care) produced similar improvements in depression severity in both groups. This reduction of depression symptoms was observed for up to 12 months after the intervention ended, suggesting that long-term improvements in depression are possible with collaborative care in patients with and without PTSD symptoms.

Keywords

Depression; PTSD; Primary Care; older adults

Corresponding author: Domin Chan, National Asian Pacific Center on Aging, 1511 Third Avenue, Suite 914, Seattle, WA 98101-1626, Fax: 206-624-1023, domin(at)napca.org or dominc(at)uw.edu.

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Introduction

Depression is increasing in prevalence and is now projected to be the second leading cause of disability worldwide by 2020 (Murray and Lopez, 1997). Among older adults in primary care, depression and dysthymia prevalence is about 5 to 10% (Lyness et al., 1999; Schulberg HC et al., 1998). Many individuals with depression also have posttraumatic stress disorder (PTSD). Few studies of depression and PTSD have focused on older adult populations. Studies have reported that among depressed individuals, 36–52% have comorbid PTSD (Spiro et al., 2006; Hankin et al., 1999; Campbell et al., 2007). Two of these studies focused on Veterans and one had a mainly older Veteran population which may differ from the general primary care older adult population. Studies in mixed age populations found that patients with comorbid depression and PTSD are more severely depressed, more functionally impaired, have a more complicated and persistent history of mental illness (Felker et al., 2003; Zayfert et al., 2002) and have higher rates of suicidal behavior (Oquendo et al., 2003) and completed suicides (Gradus et al., 2010) than patients with depression alone or PTSD alone. Depression and PTSD are also associated with high medical care utilization and costs (Simon et al., 1995; Kramer et al., 2003; Greenberg et al., 1999; Samson et al., 1999).

Depression treatment commonly occurs in primary care, (Linn and Yager, 1980; Wells et al., 2000) where depression (Coyne et al., 1995; Magruder-Habib et al., 1989; Lyness et al., 1995) and PTSD are reported to be under-detected and under-treated (Rodriguez et al., 2003; Stein et al., 2000; Schonfeld et al., 1997). Collaborative care interventions have been shown to be more effective than usual care for late-life depression in primary care, leading to improved processes and outcomes of depression care (Bruce et al., 2004; Katon et al., 1997; Wells et al., 2000; Unutzer et al., 2002) and improvements in social/role functioning for depressed primary care patients (Lin et al., 2000). Studies also report collaborative-care to be cost-effective (Katon et al., 2005; Katon et al., 2004) over two years and associated with longer term cost-savings (Unutzer et al., 2008) and moderate increases in treatment costs (Simon et al., 2002; Von Korff et al., 1998; Simon et al., 2001B; Lave et al., 1998; Simon et al., 2001a; Schoenbaum et al., 2001). Little is known about how comorbid PTSD affects the effectiveness of collaborative care treatments for depression and total costs of health care. Previous analyses of patients with and without PTSD symptoms from the IMPACT trial found that depressed patients with comorbid PTSD took longer to have a significant decrease in depression than depressed older adults without PTSD (Hegel et al., 2005). We present a longer-term follow-up of this study cohort from the IMPACT trial that examines the hypothesis that depressed patients with PTSD symptoms do not maintain treatment gains and have fewer depression-free days over the long-term after collaborative care intervention ends. We also assessed total health care costs in PTSD screen positive and negative study participants over 2 years.

Methods

Study Site and Participants

This analysis uses data from the Improving Mood Promoting Access to Collaborative Treatment (IMPACT) study which is a multisite randomized trial of collaborative care for

late-life depression in primary care from January 1999 to August 2001 (Unutzer et al., 2002). Seven study sites from eight health care organizations including 18 primary care clinics in five states participated in the study. Patients were recruited into the study by two methods. First, referral from primary care providers, other clinic staff or from patients in response to clinic information about the program. Second, depression screening with a 2-item depression screener adapted from the PRIME-MD used in the participating primary care clinics. Patients were interviewed in person or by telephone to assess depression and mental health history. Patients were eligible if they were age 60 years or older and met the DSM-IV criteria for a current major depression or dysthymia, as assessed by the structured clinical interview for the DSM-IV (SCID) (Williams et al., 1992; First MB et al., 1996). Patients with current drinking problems, bipolar disorder, psychosis, acute risk of suicide, or under current psychiatric treatment and those who met screening criteria for severe cognitive impairment were excluded. Patients were randomly assigned to IMPACT collaborative care intervention or usual care. Clinical outcomes were assessed by independent telephone interviews at 3, 6, 12, 18 and 24 months. All patients gave written informed consent, with study protocols approved by the Institutional Review Boards at the UCLA Study coordinating center and participating universities and health care organizations.

The PTSD screener started with the following question about experiencing a traumatic event, "Some people have terrible experiences that most people don't have, for example, being attached or threatened with a weapon; being in a fire, flood or bad traffic accident; or seeing someone being badly injured or killed. Has anything like this ever happened to you?" If the patient answered affirmative to this question, two questions on PTSD symptoms were asked: (1) "In the past 6 month, have you had recurrent dreams or nightmares?", (2) "In the past 6 months, have you had flashbacks, feel or act as if trauma is happening again?" (Hegel et al., 2005). Patients who screened positive for comorbid PTSD indicated that they experienced a traumatic event and answered affirmative to one of the two PTSD questions. Brief screeners for PTSD have been used in primary care studies and are comparable to other screening tools for mental disorders, such as the PTSD Symptom Checklist (Prins et al., 2003) (Campbell et al., 2007).

Intervention

The IMPACT intervention is a multifaceted stepped-care approach to depression care (Unutzer et al., 2002). The collaborative care intervention included diagnosis and treatment, patient education, patient support and progress evaluation based on a chronic illness model to deliver evidence-based treatment (Wagner et al., 1996). Participants in the intervention group received a 20-minute educational videotape and a booklet about late-life depression (Harpole L et al., 1999; Oishi and Unutzer, 1999). Their care was delivered by a multidisciplinary collaborative care team in primary care that included the patient's primary care doctor, a depression care manager (either a nurse or psychologist), and a consulting psychiatrist. Treatment options for depression included a choice of: (1) antidepressant medications and/or (2) problem-solving therapy, a brief structured psychotherapy for depression (Haverkamp et al., 2004). Depression care managers also encouraged patients to schedule pleasant life events and referred them to additional health or social services if needed. The depression care manager followed patients for 12 months. Patients who did not

respond to initial treatment were discussed with the IMPACT team and a “Step 2” treatment plan was initiated. This included either adding antidepressants to psychotherapy, switching from medication to therapy, or augmenting psychotherapy or medications with additional medications. Team consulting psychiatrists consulted on all intervention patients who were not improving as expected and performed in-person evaluations on approximately 10% of the intervention participants. If patients were not responding after 10 weeks to step 2 treatment, they were reviewed by the team and additional treatments were considered. The intervention has been described in greater detail in Unützer et al 2002 and Unützer et al 2001 (Unutzer et al., 2002;Unutzer et al., 2001).

Usual Care

For patients assigned to usual care, their primary care providers were notified of their diagnoses and their providers were encouraged to initiate routine treatment for depression or referral to mental health specialists as clinically indicated.

Outcome Measures

Computer-assisted telephone interviews were conducted at baseline (within one week of enrollment), 3, 6, 12, 18 and 24 months to assess treatment outcomes and functioning. Depression severity was measured using the Hopkins Symptoms Checklist (SCL-20) depression scale.(Derogatis et al., 1974) The Sheehan Disability Scale was used to measure how reduced health status interferes with work and school, family life and social life (Sheehan et al., 1996). This scale has been previously used in trials of depression and panic disorder (Lin et al., 2000).

Depression-free days during the 24 month follow-up period, our main outcome measure, was calculated based on the method developed by Lave et al, (Lave et al., 1998) and adapted by other studies (Simon et al., 2001b;Liu et al., 2003). SCL depression scores from baseline, 3, 6, 12, 18 and 24 month assessments were used to calculate the number of depression-free days during the 24 month follow-up period (Vannoy, 2009).

Total health care costs from the payer’s perspective were captured from each of the eight participating health care organizations. In fee-for services health systems, the actual revenue generated for the services provided (not the charges) was estimated. In capitated health systems, costs were derived from cost-accounting data. Total outpatient costs included all encounters with medical and ancillary providers that included mental health and non-mental health-related costs. Total costs included inpatient and outpatient health services costs.

Data Analysis

Descriptive analyses comparing differences in patient characteristics between PTSD groups at baseline were conducted using ANOVA for continuous variables and Pearson chi-squared tests for categorical variables. ANOVA was also used to assess the unadjusted differences in scores for the SCL depression for 3, 6, 12, 18, 24-month follow-up intervals. General linear regression models were used to examine intervention, PTSD, and PTSD x intervention interaction effects on SCL depression scores and depression-free days adjusted for variety of baseline characteristics These included demographic factors (age, gender, race, education

level) and possible confounding factors including baseline depression score, baseline Sheehan Disability score, 2 or more prior episodes of depression, number of comorbid chronic medical conditions and baseline quality of life. Statistical analyses used SAS 9.1 (SAS Institute, Cary, NC).

For the costs analyses, outpatient costs and total costs were compared using general linear regression models. All the analyses were performed on the multiple imputed data sets and then combined using SAS Proc Mianalyze procedure. The combining method is Rubin's method (Rubin, 1987). A total of 117 participants died before the 24 month follow-up. Individuals contributed data for periods observed. Participants who died were assigned "zero" costs and depression-free days to observation points after their death.

Results

Patient Characteristics

The study enrolled 1801 patients: 906 were randomly assigned to collaborative care and 895 to usual care. Baseline characteristics of the study participants were not significantly different between collaborative care and usual care groups.(Unutzer et al., 2002) At baseline, depressed patients with PTSD symptoms were more likely to be women and were generally more chronically ill, more depressed, had greater functional impairment, and reported lower quality of life ratings than depressed patients without PTSD.(Hegel et al., 2005)

Collaborative Care Effect on Depression Outcomes by PTSD Status

Figure 1 shows the unadjusted trend of depression scores over time between intervention and usual care depressed patients with and without symptoms of PTSD. Depressed older adults with PTSD symptoms had higher baseline depression severity in both intervention and control groups. Compared to controls, patients assigned to the intervention group with and without PTSD symptoms had significantly lower depression severity during the 12 month of the intervention period. Even during the 12 month period after the intervention ended, intervention patients with and without PTSD symptoms continued to have significantly lower depression scores. These findings remained similar after adjusting for gender, race, recruitment method, number of chronic conditions, prior depression episodes, baseline SCL, functional impairment, and quality of life. (Table 1)

Figure 2 shows the number of depression-free days for Intervention and Usual care patients and the difference between collaborative care and usual care for depressed patients with and without PTSD symptoms. The intervention effect (the difference in DFDs between collaborative care and usual care for patients) were similar for patients with PTSD symptoms and without PTSD symptoms (99 vs. 108 depression-free days; $p=0.85$).

Multiple regression results (not shown) found that interaction of intervention status by comorbid PTSD was not statistically significant. This indicates that over 24 months, the effect of collaborative care intervention compared to usual care was not statistically significantly different between older depressed adults with PTSD versus those without PTSD symptoms.

We found no statistically significant differences between intervention and usual care outpatient or total health care costs in depressed patients with and without PTSD symptoms. On average, total costs for collaborative care ranged from \$14,766 to \$16,362 for depressed patients with and without PTSD symptoms respectively and \$14,703 to \$15,566 for usual care depressed patients with and without PTSD symptoms respectively.

Discussion

Our study extends findings from an earlier analysis (Hegel et al., 2005) to show that collaborative care is equally effective compared to usual care depressed older primary care patients with and without PTSD symptoms. Although earlier analyses at the end of the 12-month intervention period suggested that patients with PTSD symptoms were slower to respond than patients without PTSD symptoms and another study of comorbid anxiety found longer treatment response and earlier depression recurrence in depressed patients with comorbid worry symptoms (Andreescu et al. 2009), we did not find that patients with PTSD symptoms had worse long-term depression outcomes than patients without PTSD symptoms. In fact, our analyses examining the one year period after the intervention ended suggest that improvements made in the intervention group largely persisted for an entire year in patients with and without PTSD symptoms.

Unadjusted and adjusted analyses found that total outpatient costs and total health costs were not significantly different between collaborative care and usual care for patients with and without comorbid PTSD symptoms over two years.

Clinical reasons to explain why collaborative care treatment for depression is effective for older adults with PTSD symptoms include the fact that treatment components offered as part of the IMPACT collaborative care program are similar to evidence-based treatments for PTSD. These included antidepressants, which are also used to treat PTSD, and behavioral activation, which can be similar to exposure-based therapy for PTSD (Unutzer et al., 2001). While behavioral activation often involves pleasant activities, it can also focus on activities the patient finds difficult that may explain avoidance of specific behaviors (Martell et al., 2010). Wagner et al. pilot-tested behavioral activation for patients with PTSD and depression who were physically injured survivors of traumatic injury (Wagner et al., 2007). Their findings suggested that Behavioral Activation can be helpful for adults with PTSD. Our findings for depressed patients with PTSD re-experiencing symptoms appear to be consistent with Andreescu's findings that anxious arousal symptoms, such as panic, have less of a negative effect on depression treatment response than anxious worry symptoms (Andreescu et al. 2009).

This study had several limitations. Our findings cannot be generalized to patients with other conditions that are commonly comorbid with PTSD and depression, such as alcohol use or acute suicidal ideation, since these patients were excluded from our study. In addition, the PTSD screening questions have not been validated against standard semi-structured PTSD diagnostic interviews. Thus, we cannot verify the accuracy of PTSD diagnosis. Due to the lack of specificity in our PTSD screener, there could be some false-positives in our sample. However, PTSD screen positive status was assigned only if the patient mentioned signs of

recurrent nightmares or flashbacks related to the traumatic event which are some of the most severe PTSD symptoms. Another study limitation is that we had limited power for cost analyses.

Future research may want to use a validated PTSD diagnostic tool to assess PTSD. Research could also examine the long-term effectiveness of collaborative depression care for depressed patients with comorbid panic and worry symptoms.

Conclusions

Our results suggest that collaborative care provides long-term improvements in depression-related outcomes for older depressed adults with and without PTSD symptoms in primary care despite the fact that patients with PTSD symptoms appeared more depressed, more medically ill, and more impaired in their functioning at baseline.

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Figure 1.

Depression score over 2 years by PTSD screen status and intervention group

Notes: Scores on the SCL-20 ranged from 0–4. IV= intervention UC= Usual Care

Figure 2.
Depression-free days over two years by PTSD screen status (Unadjusted)

Table 1

Mean Symptom Check List depression score (SCL-20) and difference between collaborative care and usual care over 24 months by PTSD screen status

SCL-20 Depression Score (range 0-4) Months	Unadjusted			Adjusted ^a		
	Collab. care Mean (SE)	Usual care Mean (SE)	Mean difference between collab. care & usual care (95% CI)	Difference between collab. care & usual care (95% CI)	t-value (df)	P
With PTSD Symptoms	n=106	n=85				
0	1.92 (0.06)	1.82 (0.07)	0.10 (-0.08, 0.27)	...	...	...
6	1.11 (0.08)	1.21 (0.08)	-0.10 (-0.31, 0.11)	-0.11 (-0.33, 0.12)	-0.99 (24)	0.334
12	1.16 (0.08)	1.41 (0.07)	-0.25 (-0.45, -0.04)	-0.23 (-0.45, -0.00)	-2.09 (21)	0.050
18	1.15 (0.08)	1.45 (0.08)	-0.30 (-0.52, -0.08)	-0.26 (-0.49, -0.03)	-2.43 (17)	0.026
24	1.13 (0.07)	1.42 (0.08)	-0.29 (-0.5, -0.08)	-0.25 (-0.48, -0.02)	-2.32 (14)	0.036
Without PTSD Symptoms	n=800	n=810				
0	1.65 (0.02)	1.66 (0.02)	-0.01 (-0.07, 0.05)	...	...	
6	1.17 (0.03)	1.46 (0.02)	-0.29 (-0.36, -0.22)	-0.29 (-0.37, -0.21)	-7.68 (13)	<0.001
12	0.91 (0.02)	1.21 (0.03)	-0.42 (-0.49, -0.35)	-0.41 (-0.48, -0.35)	-12.38(21)	<0.001
18	0.97 (0.03)	1.39 (0.03)	-0.28 (-0.36, -0.21)	-0.26 (-0.34, -0.18)	-6.87 (14)	<0.001
24	1.09 (0.02)	1.36 (0.03)	-0.23 (-0.30, -0.15)	-0.21 (-0.30, -0.13)	-5.47 (12)	<0.001

Note: S.E. = Standard error; C.I.= confidence interval df= degrees of freedom;

^a Linear regression adjusted for age, gender, race, recruitment method, chronic conditions (0-10), 2+ prior depression episodes, baseline SCL (except for baseline SCL), functional impairment, and quality of life