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The Impact of Posttraumatic Stress Disorder on the 6-Month Outcomes in Collaborative Care Management for Depression

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Abstract

Posttraumatic stress disorder (PTSD) has symptoms that exist along a spectrum that includes depression and the 2 disorders may coexist. Collaborative care management (CCM) has been successfully used in outpatient mental health management (especially depression and anxiety) with favorable outcomes. Despite this, there exist limited data on clinical impact of a diagnosis of PTSD on depression outcomes in CCM. The present study used a retrospective cohort design to examine the association of PTSD with depression outcomes among 2121 adult patients involved in CCM in a primary care setting. Using standardized self-report measures, baseline depression scores and 6-month outcome scores were evaluated. Seventy-six patients had a diagnosis of PTSD documented in their electronic medical record. Patients with PTSD reported more severe depressive symptoms at baseline (Patient Health Questionnaire–9 score of 17.9 vs 15.4, $P < .001$) than those without PTSD. Controlling for sociodemographic and clinical characteristics, a clinical diagnosis of PTSD was associated with lower odds (AOR = 0.457, CI = 0.274-0.760, $P = .003$) of remission at 6 months and was also associated with higher odds (AOR = 3.112, CI = 1.921-5.041, $P < .001$) of persistent depressive symptoms at 6 months after CCM. When coexisting with depression, a diagnosis of PTSD was associated with worse depression outcomes, when managed with CCM in primary care. Opportunities still exist for more aggressive management of depression in these patients to help improve remission as well as reduce persistent depressive symptoms.

Keywords

primary care, integrated behavioral health, mood disorder, care coordination

Introduction

Posttraumatic stress disorder (PTSD), as a component of common anxiety disorders, has 12-month prevalence of 3.5% seen in the general US population.[1] Lifetime prevalence of PTSD has been shown to be as high as 6% to 10% in civilian primary care and 11% to 20% in Department of Veterans Affairs (VA) primary care settings.[2] In the United States, approximately 7.7 million adults suffer from PTSD in a given year.[3] PTSD also can vary widely by country and populations studied (based on exposure to traumatic events) and is highly comorbid with and can negatively impact other mental health conditions such as mood disorders, impulse control disorders, and other anxiety disorders.[1]

Posttraumatic stress disorder is characterized by clusters of symptoms including reexperiencing of trauma, avoidance, hyperarousal, and depression.[4,5] Severity of the disorder can be affected by having a comorbid axis I diagnosis (particularly depression/substance abuse disorders). PTSD has a unique biological profile where the stress-responsive brain and hormones do not attain homeostasis and may be involved with the inadequate stress response.[3] The Primary Care PTSD screen (PC-PTSD) has been recommended as a sensitive and specific screening tool for PTSD in the outpatient primary care setting; however, it is not recommended to universally screen all patients for PTSD.[2,6] Providers should consider evaluating those patients who are at high risk of the diagnosis, including those who had experienced psychological trauma, unexpected acute medical emergencies or had other psychiatric disorders.[2]

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Posttraumatic stress disorder is more prevalent in women, who are twice as likely as men to have suffered from the condition. These women often have different types of precipitating trauma (molestation and sexual abuse) and higher rates of comorbid panic disorders than men. The main burden of PTSD in the United States is not from war or terrorism but rather common events like crimes, motor vehicle accidents, and childhood maltreatment (sexual, physical, and emotional).[5]

Posttraumatic stress disorder has various rates of remission but overall tends to have poor outcomes over time.[7] A study by Chapman et al[8] stated that most patients with PTSD remit but a significant minority report symptoms decades after onset. Patients who had sustained interpersonal violence or childhood trauma seemed to have worse chances at remission.

Major depressive disorder is frequently a comorbid condition in patients with PTSD.[1] Primary care management of patients with depression has focused on enhancing care and improving outcomes with collaborative care management (CCM).[9-12] CCM is a team-based approach that can identify comorbid psychiatric disorders, provide appropriate intervention in a team based manner and careful follow-up with the patient in order to measure their improvement using different patient self-assessment scales.[13] Findings from a study on outcomes related to CCM for older adults indicated that among patients with depression, PTSD comorbidity was associated with a decreased likelihood of remission.[14]

Posttraumatic stress disorder is challenging to diagnose and treat. PTSD is commonly comorbid with other mental health diagnoses and depression is common in primary care practices. Based on a review of the literature, we hypothesized that the clinical documentation of a PTSD diagnosis for the patient would have a negative impact on outcomes for primary care patients with depression treated by CCM.

Methods

Our institution implemented CCM for the treatment of our primary care patients with depression in 2008.[15] Initially available at only 1 clinical site, CCM has been available at all 5 practice sites since 2010. The decision to enroll a patient in CCM instead of usual primary care is a shared decision making opportunity with the patient and the provider. While CCM has been successful in improving clinical outcomes, there remain a significant percentage of patients with persistent depressive symptoms (PDS) 6 months after enrollment (20.0%, n = 1110).[16]

For this retrospective cohort study, we used an automated query program to review clinical records of subjects enrolled in our depression registry to identify the diagnosis of PTSD using ICD-9 code 309.81. Subjects enrolled in the depression registry from March 1, 2008 through June 30, 2013 (allowing for 6-month follow-up through December 2013) were retrospectively reviewed. Eligible subjects were adults patients, aged 18 years and older, and who previously authorized research use of their electronic medical record (EMR), and who were diagnosed with major depressive disorder (included in our depression registry) and paneled to a primary care provider. The demographic variables recorded were age, gender, marital status (married or not), and race (white or not). The clinical variables collected were initial Patient Health Questionnaire–9 (PHQ-9),[17] Generalized Anxiety Disorder (GAD-7 score),[18] Mood Disorders Questionnaire (MDQ),[19] and clinical diagnosis (first episode or recurrent major depressive disorder or dysthymia). Patients with a diagnosis of bipolar disorder were excluded from the registry, although a positive MDQ score without a diagnosis of bipolar disorder was allowed. The predictor variable was the presence or absence of the diagnosis of PTSD as noted in the EMR. The patients were not specifically examined or screened for the diagnosis of PTSD. The outcome variable being assessed was the 6-month follow-up PHQ-9 score. Remission at 6 months was defined by a PHQ-9 score of <5; while PDS was defined as a PHQ-9 score of ≥10.[20] The study cohort included only patients with a complete data set (n = 2121).

Statistical analysis was performed using MedCalc Software (www.medcalc.org, version 14.12.0). *P* values <.05 were considered significant; all statistical tests were 2-tailed. Our institutional review board reviewed and approved this study. Categorical variables between groups were evaluated with chi-square tests, and Mann-Whitney testing was used for comparison between groups for the continuous variables. Multiple logistic regression modeling was used to examine the association between predictor variables and outcomes, while controlling for sociodemographic and clinical characteristics.

Results

Of the 6851 patients enrolled in the depression registry during the study period, 3348 were enrolled in CCM and 3503 were treated by their primary care provider with usual care. The patients treated with usual primary care did not have routine baseline GAD-7 or MDQ scores and had significantly decreased rates of follow up at 6 months. Of the patients enrolled in CCM, 2121 patients had a complete data set, including intake parameters and 6-month PHQ-9 follow-up information, with the majority of these patients not included due to lack of follow-up data at 6 months. This cohort was defined as the study population. Retrospective review of the EMR demonstrated that 76 patients (3.6%) in the study cohort had a documented clinical diagnosis of PTSD any time in their medical record on or before December 31, 2014. The remaining 2045 patients did not have a clinical diagnosis of PTSD ever documented in the EMR.

Table 1. Comparison of CCM Patients With Depression by Comorbid Diagnosis of PTSD.

Variable	Patients With PTSD Diagnosis (n = 76)	Patients Without PTSD Diagnosis (n = 2045)	*P*
Age, years, mean (range)	39.7 (18.2-72.3)	42.6 (18.0-92.3)	.178
Gender: % female (n)	72.4 (55)	73.9 (1511)	.871
Marital status: % married (n)	39.5 (30)	55.2 (1129)	.010
Race: % white (n)	89.5 (68)	94.3 (1929)	.128
Initial PHQ-9 score, mean (range 10-27)	17.9	15.4	<.001
Diagnosis, % (n)			.006
First episode	34.2 (26)	51.6 (1056)	
Recurrent depression	52.6 (40)	41.1 (841)	
Dysthymia	13.2 (10)	7.2 (148)	
Anxiety severity, % (n)			.063
Asymptomatic/ mild	26.3 (20)	37.5 (767)	
Moderate/severe	73.7 (56)	62.5 (1278)	
Abnormal MDQ score, % (n)	13.2 (10)	8.7 (178)	.256
PHQ-9 score <5 at 6 months, % (n)	30.2 (23)	55.6 (1138)	<.001
PHQ-9 score ≥10 at 6 months, % (n)	51.3 (39)	20.2 (414)	<.001

Abbreviations: CCM, collaborative care management; PTSD, posttraumatic stress disorder; PHQ-9, Patient Health Questionnaire–9; MDQ, Mood Disorder Questionnaire.

Table 2. Adjusted Odds Ratio of Remission (PHQ-9 Score <5) After 6 Months of Collaborative Care Management for Treatment of Depression, by Variable (n = 2121).

Variable	Adjusted Odds Ratio	95% CI	*P*
Age	1.007	1.001-1.013	.019
Gender: female	1.055	0.861-1.293	.606
Marital status: married	1.415	1.178-1.699	<.001
Race: white	1.053	0.722-1.535	.789
Initial PHQ-9 score	0.936	0.914-0.958	<.001
Diagnosis			
First episode	Referent	Referent	Referent
Recurrent depression	0.735	0.611-0.886	.001
Dysthymia	0.954	0.673-1.354	.793
Anxiety severity			
Asymptomatic/ mild	Referent	Referent	Referent
Moderate/severe	0.820	0.675-0.996	.046
Abnormal MDQ score	0.635	0.460-0.876	.006
PTSD diagnosis	0.457	0.274-0.760	.003

Abbreviations: PTSD, posttraumatic stress disorder; PHQ-9, Patient Health Questionnaire–9; MDQ, Mood Disorder Questionnaire.

To evaluate the potential for differences in the study population and the usual primary care group and the patients enrolled in CCM, the number of patients with the PTSD diagnosis in all the groups was determined. The percentage of patients with a clinical diagnosis of PTSD within the overall CCM group (n = 123/3348), usual care group (n = 122/3503), and the study cohort (n = 76/2121) was remarkably consistent (3.7% vs 3.6% vs 3.6%, P = nonsignificant). While the diagnosis of PTSD was not actively determined, it was reassuring that in our primary care populations it did appear to be consistently documented in all of these groups, thus decreasing the likelihood that there was a significant loss to follow-up in the study group.

For patients in CCM, there was no statistical difference between the PTSD and non-PTSD groups for age, gender, race, or baseline anxiety and MDQ screening scores (Table 1). In comparison between the 2 groups, patients with PTSD diagnosis were less likely to be married (39.5% vs 55.2%, P = .010), more likely to be diagnosed with recurrent depression (52.6% vs 41.1%, P = .006), and have reported more severe depressive symptoms based on PHQ-9 score at baseline (17.9 vs 15.4, P < .001) than those patients without the diagnosis of PTSD. Six-month follow-up demonstrated that the PTSD group had significantly worse outcomes with regard to remission (30.2% vs 55.6%, P < .001) or PDS (51.3% vs 20.2%, P < .001).

Logistic regression modeling, while retaining all intake variables, for the outcome of remission at 6 months showed that a clinical diagnosis of PTSD was associated with lower odds of remission at 6 months (adjusted odds ratio [AOR] = 0.457, confidence interval [CI] = 0.274-0.760, P = .003) (Table 2). A clinical diagnosis of PTSD was also associated with higher odds of PDS at 6 months, while controlling for all other variables (AOR = 3.112, CI = 1.921-5.041, P < .001) (Table 3).

Discussion

As hypothesized, the central finding of the present study suggested that among patients receiving CCM for depression, those with comorbid PTSD reported higher depression severity at baseline and worse overall 6-month outcomes compared with patients without comorbid PTSD. A documented diagnosis of PTSD was associated with decreased odds of clinically significant improvement from depression to remission after 6 months of CCM in a primary care setting, even while controlling for the influence of sociodemographic variables, severity of depressive symptoms at baseline, anxiety severity, and a positive screen on the MDQ. PTSD is not as commonly diagnosed as depression and our study has shown that the 2 disorders may coexist and that this coexistence was associated with poorer outcomes.

Table 3. Adjusted Odds Ratio of Persistent Depressive Symptoms (PHQ-9 Score ≥10) After 6 Months of Collaborative Care Management for Treatment of Depression, by Variable (n = 2121).

Variable	Adjusted Odds Ratio	95% CI	*P*
Age	0.990	0.986-0.998	.011
Gender: female	0.940	0.734 - 1.203	.621
Marital status: married	0.732	0.584 - 0.917	.007
Race: white	0.841	0.544 - 1.300	.435
Initial PHQ-9 score	1.089	1.060 - 1.120	<.001
Diagnosis			
First episode	Referent	Referent	Referent
Recurrent depression	1.219	0.970-1.532	.089
Dysthymia	1.092	0.714-1.671	.684
Anxiety severity			
Asymptomatic/ mild	Referent	Referent	Referent
Moderate/ severe	1.339	1.042-1.720	.023
Abnormal MDQ score	1.982	1.421-2.763	<.001
PTSD diagnosis	3.112	1.921-5.041	<.001

Abbreviations: PTSD, posttraumatic stress disorder; PHQ-9, Patient Health Questionnaire–9; MDQ, Mood Disorder Questionnaire.

With that in mind, findings from our study suggest that primary care providers could consider screening for PTSD in patients who are not responding to usual treatments for depression. Screening for PTSD can be made easy and efficient for primary care physicians by incorporating into practice standardized brief self-report measures that are simple to administer and interpret. Brief screening instruments that have been identified as having adequate sensitivity, specificity, and predictive values in primary care settings include the PC-PTSD screen[21] and the PTSD Checklist for *DSM-5* (PCL-5).[22] Though our study did not address other close family support relationships, the finding of married status being protective in overall remission of depression may be a surrogate for these relationships.

Common barriers to successful implementation to CCM include decreased ability to screen and coordinate appointments, patient nonresponse or noncompliance, and lack of adequate resources for follow-ups.[13] However, important components of a successful CCM plan include well-defined care management roles, supportive primary care physicians and referring psychiatrists and face-to-face communication between care managers and primary care physicians.[23]

As an observational study, we were limited by those characteristics inherent in the nonrandom choice of patients (only included those with complete data) and the use of a clinical diagnosis of PTSD versus a standard tool to inform that diagnosis. Bias may have been introduced by the degree to which patients had a complete set of records—some patients may have been treated for mental health issues outside of our system or for less time. While the association between PTSD and depression identified in this study was significant, it is impossible to determine whether or not the depression in the patients with PTSD was a symptom of PTSD or a separate diagnosis of major depression. Additionally, patients with both diagnoses would likely be on antidepressants, but potentially on other psychiatric medications, and these could also affect the outcomes of interest. Finally, the prevalence of PTSD may be higher in African Americans[24] and both African American and Latino populations show higher rates of persistence of psychiatric disorders.[25] Both of these ethnic groups have decreased access to mental health care, further perpetuating persistence of these conditions.[26] The population served in our clinic is mostly non-Hispanic White, and it is possible that the results may be more extreme for the African American and Latino populations, which were underrepresented in our data. However, we have previously shown that CCM was successful at reducing ethnic/racial disparities noted in depression management.[27] Therefore, the association that depression management of patients with PTSD remains applicable for all ethnic groups. Larger studies including diverse racial/ethnic and socioeconomic status could be implemented to further study these outcomes.

As all the patients in the study cohort were in CCM, they had all the treatment options available including psychotherapy, pharmacotherapy, motivational interviewing by the care manager. Frequency of follow up was usually predicated based on patient's depression severity. There may have been differences between our patients diagnosed with PTSD and the patients without PTSD related to medication dosages, frequency of care manager contact or length of time in CCM that may account for the differences noted in this study. This study did not compare patients treated with usual primary care and those treated with CCM.

Care coordination offers a promise for patients with depression to have improved outcomes. Not every patient in our depression registry was treated by CCM, suggesting a need to increase engagement of patients in care coordination and to explore additional treatment options for those with depression who may have PTSD and who show signs of not improving.

Conclusions

When coexisting with depression, a diagnosis of PTSD was associated with worse depression outcomes, when managed with CCM in primary care. Screening for PTSD in depressed patients with persistent depressive symptoms, increased attention to engaging patients in care coordination, and

adaptations of care coordination approaches for those patients comorbid with PTSD are all considerations based on our findings. Opportunities still exist for more aggressive management of depression in these patients to help improve remission as well as reduce persistent depressive symptoms.

Declaration of Conflicting Interests

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