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Collaborative Care Management Associated With Improved Depression Outcomes in Patients With Personality Disorders, Compared to Usual Primary Care

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Abstract

Background: The use of a collaborative care management (CCM) model can dramatically improve short- and long-term treatment outcomes for patients with major depressive disorder (MDD). Patients with comorbid personality disorder (PD) may experience poorer treatment outcomes for MDD. Our study seeks to examine the differences in MDD treatment outcomes for patients with comorbid PD when using a CCM approach rather than usual care (UC). **Methods:** In our retrospective cohort study, we reviewed the records of 9614 adult patients enrolled in our depression registry with the clinical diagnosis MDD and the diagnosis of PD (Yes/No). Clinical outcomes for depression were measured with Patient Health Questionnaire–9 (PHQ-9) scores at 6 months. **Results:** In our study cohort, 59.4% of patients (7.1% of which had comorbid PD) were treated with CCM, as compared with 40.6% (6.8% with PD) treated with UC. We found that the presence of a PD adversely affected clinical outcomes of remission within both groups, however, at 6 months patients with PD had significantly lower MDD remission rates when treated with UC as compared with those treated with CCM (11.5% vs 25.2%, $P = .002$). Patients with PD in the UC group were also noted to have an increased rate of persistent depressive symptoms (PHQ-9 score ≥10) at 6 months as compared with those in the CCM group (67.7% vs 51.7%, $P = .004$). **Conclusions:** In patients with comorbid MDD and PD, clinical outcomes at 6 months were significantly improved when treated with CCM compared with UC. This finding is encouraging and supports the idea that CCM is an effective model for caring for patients with behavioral concerns, and it may be of even greater benefit for those patients being treated for comorbid behavioral health conditions.

Keywords

primary care, personality disorder, behavioral health, depression, health outcomes

Introduction

Personality disorders (PDs) are complex mental health disorders that cause difficulty perceiving and relating to situations and people. Patients with PD can have problems in interpersonal relationships due to wrongly attributing those problems in the relationships to others.[1] The characteristics of these patients may elicit strong feelings in clinicians, leading to poor patient-provider communication and ineffective assessment of medical and psychiatric disorders.[2,3] PDs are common in the United States, with a prevalence of 9.1% based on the National Comorbidity Survey Replication.[4]

Effective assessment of PD is of particular relevance for primary care clinicians given that the presence of PD can interfere with the treatment of other medical and psychiatric disorders. Past examinations have highlighted the importance of diagnosing PD by paying careful attention to the patient's recollection of past and present interpersonal interactions, observing the patient's behavior in clinic, as well as identifying repetitive maladaptive patterns through repeated encounters with the patient. Clinicians can also benefit from

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asking questions about the patient's relationships, including their feelings of connectedness (eg, trust, warmth, mutuality) with friends, family, and medical providers.[5]

The challenges of caring for people with PD may be amplified by comorbidity of other medical and psychiatric conditions. PD has been found to be highly comorbid with major depressive disorder (MDD), with comorbid prevalence reported in ranges up to 41% to 81%.[6] Comorbid PD and MDD are associated with poorer clinical outcome than depression alone. In a meta-analysis, comorbid PD and MDD were found to be twice as likely to lead to a poorer clinical outcome as MDD alone.[7]

Collaborative care management (CCM) has been well demonstrated to be a more effective treatment model for the management of patients with MDD than usual care (UC).[8,9] Our institution implemented CCM for the treatment of our primary care patients with depression in 2008.[10] CCM is a team-based approach that identifies and manages depression, while providing appropriate interventions and careful follow-up in order to measure the patient's clinical response. In our practice, when compared with UC, CCM has been associated with accelerated MDD remission rates[11] and decreased health care utilization rates.[12] CCM was also associated with significant short-term improvements in depression outcomes in patients with comorbid physical conditions.[13-15] Also, a prior study in our institution demonstrated that within CCM, patients with PD were able to achieve remission only 25.0% of the time by 6 months compared with a 54.3% remission rate for patients without PD ($P < .001$).[16]

CCM for depression in our institution is initiated by shared decision making between the patient and their treating clinician. The diagnosis may have been identified through routine screening tools or through the course of a specific clinical evaluation. The patient initial assessment included the Patient Health Questionnaire–9 (PHQ-9[17]). Adult patients were considered eligible for enrollment if diagnosed with MDD, had a PHQ-9 score of 10 or higher, and did not have comorbid bipolar disorder. Enrollment into CCM was completed by a registered nurse CCM care manager with an intake of a complete psychiatric history and baseline data. Enrolled patients then received scheduled follow-up with the care manager, either in person or electronically, based on the severity of the depression. The care manager reviewed patient care weekly with on-site psychiatry consultants, who provided oversight, guidance for ongoing treatment and emergency coverage. Evidence-based guidelines were used to assist in titration of medical therapy and help make recommendations for use of other resources. The patient's primary care provider was used to help make individual treatment decisions when appropriate.

If CCM was available at the clinical location, the patient had the option to receive treatment with by their clinician via UC. UC was considered to be the sum of patient care practices in which clinicians have the ability to individualize care.[18] UC for depression in our institution allowed patients to engage with their providers primarily during clinic visits to establish a treatment plan and follow their progress longitudinally over time. These patients would still have full access to referral colleagues in behavioral health or care by other members of the health care team (team registered nurse or social worker) but received no coordination by the care manager.

Patients with PD have been shown to have worse depression outcomes at 6 months, but little is known how this compares to UC of MDD with comorbid PD. This study was designed to evaluate the outcomes for primary care patients with MDD and with and without comorbid PD. The hypothesis is that patients enrolled in CCM with comorbid MDD and PD will demonstrate improved outcomes at 6 months as compared with UC.

Methods

Our depression registry included only primary care patients who had a clinical diagnosis of MDD and a PHQ-9 score ≥10. All the patients were paneled to a primary care provider within our local health care system at 5 different clinical locations. The primary care providers were members of the Department of Family Medicine, Division of Primary Care Internal Medicine, or Division of Community Pediatrics and Adolescent Medicine of Mayo Clinic in Rochester, Minnesota. The practice had approximately 110 000 adult patients and was approximately 50% community-based and 50% clinic employees and dependents population. CCM started at one location in March 2008 and expanded to a second clinical site in the fall of 2008. By March 2010, all 5 sites had the option for using CCM. Once CCM was started at a clinic, the patient and physician used shared decision making in determining if the patient would be enrolled in CCM.

In this retrospective cohort study from March 1, 2008 through June 30, 2015 (with 6-month follow-up through December 2015), we reviewed the electronic medical records (EMR) of primary care patients enrolled in our depression registry for the clinical diagnosis of PD. Eligible patients were 18 years of age and older who previously authorized EMR research use. The variables included in the study were age, gender, marital status (married or not), race (white or not), initial PHQ-9 and the clinical depression diagnosis (first episode or recurrent major depressive disorder or dysthymia). The independent variables were the presence or absence of a diagnosis of a PD and the treatment type, UC versus CCM. Results were managed in an intention to treat model. UC patients were allowed to later decide to enroll in CCM if they still met the enrollment criteria (PHQ-9 score ≥10) or CCM patients were allowed to discontinue CCM. The outcome variable was the 6-month follow-up PHQ-9 score. Six-month outcomes were defined as: remission (PHQ-9 score <5) and persistent depressive symptoms

Table 1. Comparison of Therapy Type (Collaborative Care Management vs Usual Care) for Primary Care Patients With Depression, With or Without the Diagnosis of Personality Disorder, by Variable.

	Usual Care (N = 3899)			Collaborative Care Management (N = 5715)		
	Personality Disorder (n = 291)	No Personality Disorder Diagnosis (n = 3608)	*P*	Personality Disorder (n = 391)	No Personality Disorder Diagnosis (n = 5324)	*P*
Age, years, median (range)	34.6 (18.2-79.9)	37.0 (18.0-96.9)	.008	35.6 (18.1-92.3)	39.0 (18.0-93.2)	.006
Female, % (n)	84.9 (247)	71.2 (2582)	<.001	76.7 (300)	71.7 (3815)	.031
White, % (n)	93.5 (272)	90.8 (3275)	.122	90.8 (355)	92.9 (4945)	.125
Married, % (n)	24.4 (71)	40.5 (1461)	<.001	30.4 (119)	44.9 (2392)	<.001
Initial PHQ-9 score (range 10-27), median	16.0 (95% CI = 15.0-18.0)	14.0 (95% CI = 14.0-15.0)	<.001	17.0 (95% CI = 17.0-18.0)	15.0 (95% CI = 15.0-15.0)	<.001
Diagnosis, % (n)			<.001			<.001
First episode	37.1 (108)	48.3 (1741)		34.3 (134)	52.6 (2799)	
Recurrent	55.0 (160)	41.2 (1488)		56.7 (222)	40.0 (2127)	
Dysthymia	7.9 (23)	10.5 (379)		9.0 (35)	7.4 (398)	
Compliance with 6-month follow-up, % (n)	44.7 (130)	32.5 (884)	<.001	74.2 (290)	66.5 (3540)	.002
PHQ-9 score <5 at 6 months, % (n)	11.5[a] (15/130)	29.6 (262/884)	<.001	25.2[a] (73/290)	53.1 (1879/3540)	<.001
PHQ-9 score ≥10 at 6 months	67.7[b] (88/130)	43.6 (385/884)	<.001	51.7[b] (152/290)	22.4 (792/3540)	<.001

Abbreviation: PHQ-9, Patient Health Questionnaire–9.
[a]*P* value of .002 comparing patients with personality disorder diagnoses in usual care versus collaborative care management.
[b]*P* value of .004 comparing patients with personality disorder diagnoses in usual care versus collaborative care management.

(PDS) (PHQ-9 score ≥10).[19] The study cohort included only patients with a complete data set (N = 9614).

MedCalc Software (www.medcalc.org, version 16.8.4) was used for statistical analysis. *P* values <.05 were considered significant and all statistical tests were 2-tailed. Categorical variables were evaluated with chi-square testing, while Mann-Whitney testing (due to nonnormal distributions) 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 all the other study variables. The study was reviewed and approved by the Mayo Clinic Institutional Review Board.

Results

Of the 9614 patients in the study cohort: 5715 were treated within CCM (59.4%) and 3899 (40.6%) were treated by UC. PDs were identified in 7.1% (N = 682) of the patients in the registry, with 6.8% (N = 391) noted within the CCM group and 7.5% (N = 291) within the UC group.

Patients with a PD diagnosis were generally younger, more likely female; with a more symptomatic recurrent depressive disorder and less likely single when compared with their treatment group cohort without a PD (Table 1). Interestingly, compliance with 6-month follow-up was improved significantly in the patients with PD for both the UC and CCM groups. The presence of a PD was adversely associated with clinical outcomes of remission and PDS at 6 months within the UC and CCM groups. At 6 months, patients with a PD had a lower level of remission rates (11.5%) when treated by UC compared with those treated with CCM (25.2%, *P* = .002). Similarly, patients with a PD had an increased rate of PDS (67.7%) in the UC treated group, compared with 51.7% in the CCM group (*P* = .004).

Multiple logistic regression modeling for the outcome of remission at 6 months demonstrated (while controlling for remaining variables) that a diagnosis of PD in a patient treated with UC was associated with a decreased adjusted odds ratio of remission of 0.369 (95% CI 0.201-0.676) when compared with PD patients treated with CCM (Table 2). For the outcome of PDS at 6 months (while controlling for remaining variables), a diagnosis of PD in a patient treated with UC was associated with an increased adjusted odds ratio of PDS of 2.123 (95% CI 1.359-3.318) when compared to PD patients treated with CCM (Table 3).

Discussion

The primary finding of this study was that for patients with comorbid MDD and PD, clinical outcomes at 6 months, as defined by remission of depressive symptoms and the presence

Table 2. Odds Ratio for PHQ-9 Score <5 at 6 Months After Diagnosis of Major Depressive Disorder, by Variable (N = 4839).

	Odds Ratio	95% CI	*P*
Age (years)	1.007	1.003 to 1.010	<.001
Gender (female)	1.055	0.921-1.207	.442
Married	1.157	1.022-1.310	.021
Race (White)	1.100	0.863-1.404	.441
Diagnosis			
First episode	Referent	Referent	
Recurrent	0.681	0.601-0.772	<.001
Dysthymia	0.650	0.518-0.814	<.001
Initial PHQ-9 score	0.938	0.924-0.952	<.001
PD/Treatment			
PD/CCM	Referent	Referent	
No PD/CCM	2.773	2.099-3.663	<.001
PD/UC	0.369	0.201-0.676	.001
No PD/UC	1.047	0.770-1.424	.770
Area under the ROC curve (AUC)	0.669	0.656-0.683	

Abbreviations: PHQ-9, Patient Health Questionnaire–9; PD, personality disorder; CCM, collaborative care management; UC, usual care; ROC, receiver operating characteristic.

Table 3. Odds Ratio of PHQ-9 Score ≥10 at 6 Months After Major Depressive Disorder Diagnosis, by Variable (N = 4839).

	Odds Ratio	95% CI	*P*
Age (years)	0.991	0.9868-0.996	<.001
Gender (female)	0.870	0.749-1.011	.068
Married	0.912	0.793-1.049	.197
Race (White)	0.716	0.557-0.921	.009
Diagnosis			
First episode	Referent	Referent	
Recurrent	1.443	1.256-1.658	<.001
Dysthymia	1.346	1.053-1.720	.018
Initial PHQ-9 score	1.098	1.081-1.116	<.001
PD/Treatment			
PD/CCM	Referent	Referent	
No PD/CCM	0.326	0.253-0.419	<.001
PD/UC	2.123	1.359-3.318	<.001
No PD/UC	0.878	0.666-1.157	.356
Area under the ROC curve (AUC)	0.701	0.688-0.714	

Abbreviations: PHQ-9, Patient Health Questionnaire–9; PD, personality disorder; CCM, collaborative care management; UC, usual care; ROC, receiver operating characteristic.

of PDS, were significantly improved when treated with CCM compared to UC. This is consistent with our study hypothesis that patients with comorbid PD and MDD would have better 6-month outcomes in CCM than those in UC. Patients treated in CCM had remission rates of 25.2%, as compared with 11.5% in the UC group. Similarly, the CCM group had a lower rate of PDS (51.7%) as compared with the UC group (67.7%), indicating that for those patients who were unable to attain complete remission, there was still benefit in being treated with CCM rather than UC.

These findings are consistent with past examinations that speak to the benefit of CCM strategies. Previous studies done at our institution as well as elsewhere have shown the value of CCM in caring for patients across a spectrum of behavioral health problems, and our study continues to support the idea that CCM is an effective model for caring for patients with behavioral health concerns.[20] For patients with comorbid MDD and PD, repeated engagement with members of the collaborative care team may be especially beneficial for increasing their awareness of maladaptive interpersonal patterns and their readiness for specialty mental health treatment. One of the strengths of our study is the relatively long time frame of the study and the number of patients included in the cohort. CCM represents a significant process change in care delivery, and a study using a shorter time frame or smaller cohort may not have been able to accurately assess a mature or well-utilized care process change.

One weakness of our study is the potential under diagnosis of PD within our study cohort. In our study cohort, the prevalence of personality disorder was found to be 7.1%, whereas the prevalence of PD in the general population of the United States is estimated to be 9.1%.[4] The patients in this study included those who had provided prior consent for research-based medical record review; willingness to allow such a review may differ among patient populations and disease states. Our study examined patients identified by ICD-9 (International Classification of Diseases, Ninth Revision) codes in their EMR and it has been previously reported that using ICD-9 data may underestimate the prevalence of disease.[21]

Patients reviewed in the study were not randomly assigned to UC or CCM care. It is not known whether patient willingness to participate in CCM created bias toward clinical improvement. An opportunity for future research would be randomization of UC and CCM groups in a prospective study. Additionally, the study did not distinguish between distinct types of personality disorders; it could be hypothesized that certain types (perhaps avoidant, schizotypal) might respond less robustly to the CCM approach. Further investigations could evaluate the strength of the response seen in this study for different personality disorder types. Also, the development of a primary care screening tool for PD could be useful in managing MDD, by identifying those who would benefit from CCM.

Conclusions

Effective identification and management of comorbid MDD and PD is of particular relevance for primary care providers

given that the presence of these conditions interferes with the treatment of medical and psychiatric disorders. Our study indicates that using the CCM approach to care as opposed to UC led to improved clinical outcomes at 6 months, including improved rates of symptom remission and decreased rate of persistent depressive symptoms.

Declaration of Conflicting Interests

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