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Mental Health Service Use for Patients with Co-occurring Mental and Physical Chronic Health Care Needs in Primary Care Settings

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Abstract

Background—Individuals with mental illness experience poor health and may die prematurely from chronic illness. Understanding whether the presence of co-occurring chronic physical health conditions complicates mental health treatment is important, particularly among patients seeking treatment in primary care settings.

Objectives—Examine (1) whether the presence of chronic physical conditions is associated with mental health service use for individuals with depression who visit a primary care physician, and (2) whether race modifies this relationship.

Research Design—Secondary analysis of the National Ambulatory Medical Care Survey, a survey of patient-visits collected annually from a random sample of 3,000 physicians in office-based settings.

Subjects—Office visits from 2007–2010 were pooled for adults ages 35–85 with a depression diagnosis at the time of visit (N=3,659 visits).

Measures—Mental health services were measured using a dichotomous variable indicating whether mental health services were provided during the office visit or a referral made for: (1) counseling, including psychotherapy and other mental health counseling and/or (2) prescribing of psychotropic medications.

Results—Most patient office visits (70%) where a depression diagnosis was recorded also had co-occurring chronic physical conditions recorded. The presence of at least one physical chronic condition was associated with a 6% decrease in the probability of receiving any mental health services ($p<0.05$). There were no differences in service use by race/ethnicity after controlling for other factors.

Conclusions—Additional research is needed on medical care delivery among patients with co-occurring health conditions, particularly as the health care system moves towards an integrated care model.

Keywords

mental health; co-occurring health needs; clinical encounter

INTRODUCTION

In the United States, approximately 25% of adults have experienced a mental illness during the past year¹. Individuals with mental illness experience higher morbidity and mortality rates compared to individuals without mental illness—mostly from untreated and preventable chronic physical conditions such as cardiovascular disease, hypertension and diabetes^{2,3}. Healthcare expenses for this population with co-occurring mental and physical chronic health needs (hereafter referred to as “complex needs patients”) pose a financial burden not only for patients but for the healthcare system as these patients account for the majority of healthcare costs⁴.

Evidence suggests that the current healthcare models for complex needs patients are ineffective at treating co-occurring conditions^{4,5}. Often, each health condition is treated by a separate provider within a fragmented service delivery model⁶. Additionally, there are documented disparities in access to healthcare services among racial/ethnic minorities. The extant literature suggests that minorities are less likely to receive care for mental health conditions⁷. Further, chronic health conditions are highly prevalent in the United States and minority groups are more likely than non-Hispanic whites to experience many of these conditions^{8,9}.

Although detection and treatment of both mental and chronic physical health conditions should occur during primary care visits, it often does not¹⁰. This could be due to physicians prioritizing patients’ physical health care needs over mental health needs during a time-constrained visit¹¹. Alternatively, complex needs patients may interact more frequently with the healthcare system than those without chronic conditions, thus creating more opportunities to receive mental health services compared to healthier individuals. Given the

aging patient population, there is more pressure placed on primary care to meet both the mental and physical health care needs of patients despite shrinking resources. It is likely that the presence of co-occurring conditions complicates patient treatment or disease management¹².

Depression is a common debilitating condition and often poorly managed in primary care^{13,14}. There is evidence that coordinated health care services for patients with depression and chronic conditions, such as diabetes and/or heart disease, increase their overall wellness^{15–18}. Even though primary care has been deemed a ‘logical site for care management’ for complex need patients, they often do not receive coordinated care during their office visit¹⁹. Using a national survey, this study seeks to contribute to a better understanding of the type of mental health care that patients with complex health needs receive during their primary care visit, by: (1) determining whether patients with depression and chronic physical health conditions differ in mental health service use compared to those patients with only depression, and (2) identifying racial/ethnic differences in mental health service use.

METHODS

We used the 2007–2010 National Ambulatory Medical Care Survey (NAMCS); a nationally representative survey of patient office visits collected annually from a random sample of 3,000 physicians in office-based health care practices. Each participating physician provided information on a randomly selected sample of office visits for a randomly assigned week. Data collected during the visit included patient demographics, diagnoses, reasons for visit and treatments ordered or provided.

Study Population

Data from 2007–2010 were pooled and included 125,029 office visits. The sample was restricted to office visits of adults ages 35–85 who received healthcare from a primary care physician/generalist (i.e., family practice or internal medicine physician) (n=26,836). This age group was selected to capture the patient population most likely to experience co-morbid conditions²⁰. Further, we restricted to generalists because the majority of patients with depression in the United States receive care by these providers²¹. Office visits without a depression diagnosis recorded at the time of the visit were excluded. Adults were considered as having a depression diagnosis if a physician recorded a depressive disorder in a diagnosis field (International Classification of Disease, Ninth Edition codes: 296.20–296.3, 300.4, 311)^{22–24} or selected a diagnosis of “depression” from a list of 14 conditions named on the NAMCS form. This resulted in an analytical sample of 3,659 office visits.

Measures

Mental health services were measured using a dichotomous variable indicating whether any mental health services were provided during the office visit. Mental health services included office visits in which mental health services were provided during the office visit or a referral was made for: (1) counseling, including psychotherapy and other mental health counseling (e.g., advice or education about mental health issues) and/or (2) prescribing of

psychotropic medications (i.e., selective serotonin reuptake inhibitors, serotonin–norepinephrine reuptake inhibitors, and tricyclics).

Chronic health conditions were measured as a binary variable indicating at least one of the following physical chronic health conditions was reported during the office visit: arthritis, asthma, cancer, cerebrovascular disease (stroke and transient ischemic attacks), chronic renal failure, congestive heart failure, diabetes or obesity.

Patient racial/ethnic group was categorized as white (referent), Black, or Hispanic as a single race category as documented on the NAMCS form²⁵. While other racial groups were reported, they were not included due to limited sample sizes (<5% of office visits).

Covariates—Variables known to be related to service use were included in multivariate models. These included the number of minutes the patient spent during the visit and patient characteristics such as age, gender, insurance/payment type (i.e., private insurance, Medicaid, Medicare, self-pay, and other type of payment). Contextual variables were also included to account for differences in healthcare practices, including geographic setting (urban versus rural area), county poverty level, and the type of office setting (i.e., private solo/group practice/HMO, or community health center).

Statistical analysis

Bivariate analyses compared mental health service use during office visits with and without at least one chronic physical condition recorded and by race/ethnicity using chi-square tests for categorical variables and one-way ANOVA for continuous variables. Data analyses were performed using Stata, version 13.0²⁶. Multivariate logistic regression models were used to calculate average marginal effects using Stata's margins command. Model fit was calculated using the Hosmer and Lemeshow's Goodness of Fit test²⁷. All regression models accounted for NAMCS's complex survey design using office visit probability weights, stratification, and clustering.

RESULTS

Table 1 provides descriptive statistics associated with office visits for adult patients with depression visiting a generalist. Most office visits were recorded for white patients (79.5%), followed by Hispanics (11.3%) and Blacks (9.2%). A majority of office visits were for patients 50 years of age and older and those with at least one chronic physical condition. A higher percentage of Blacks (84.2%) and Hispanics (76.8%) had at least one chronic condition compared to whites (75.7%). A higher percentage of whites had private insurance and lived in urban areas and a lower percentage lived in a county with more than 10% poverty rate compared to minority visits. Office visits for White patients were also more likely to occur in private practices, while those for Black and Hispanic patients were more likely to occur in community health centers.

Bivariate analyses by race/ethnicity are presented in Figure 1. Results are presented for two groups: service use for office visits in which patients had a depression diagnosis and at least one chronic physical health condition, and service use for office visits for which patients had

a depression diagnosis and no chronic physical health conditions. As seen in Figure 1, approximately 50% of visits for patients with complex needs included any mental health services (counseling and/or psychotropic medication). In comparison to those with chronic physical conditions, mental health service use was higher (about 60%) for visits for depression alone. Among depression-only visits, whites and Blacks were more likely to receive any type of mental health service compared to Hispanics ($p<0.05$). Prescribing and managing psychotropic medications was the primary treatment recorded for depression-only office visits.

Table 2 presents results of multivariate regression analyses. Holding other factors constant, on average having at least one chronic physical condition was associated with a 6% decrease in the probability of being referred for or receiving any mental health services receipt ($p<0.05$). Compared to private insurance, office visits with Medicaid was associated with a 10% decrease in the probability of any mental health services receipt ($p<0.05$). As compared to visits in a community health center, office visits at a private solo/group or HMO setting were associated with a 10% lower probability of any mental health services ($p<0.01$).

In post-hoc sensitivity analyses chronic medical conditions were included as 1) a count of conditions present during the office visit and 2) the three most prevalent conditions (hypertension (44%), hyperlipidemia (32%) and arthritis (21%)). Results from models using chronic conditions as a count variable were on the same direction as the main models although not statistically significant. Hypertension and diabetes-specific models showed an 8% and 9% decrease in mental health service use among these patients versus those with mental health conditions alone ($p<0.01$).

DISCUSSION

This study examines differences in mental health service receipt in primary care office visits for two patient groups - patients with depression only, and patients with depression and co-occurring chronic physical health conditions. Overall, this study's findings showed that co-occurring health needs were commonly reported during primary care office visits for patients with depression. It was also found that the presence of at least one chronic physical condition was associated with a lower probability of receiving or being referred to mental health services. These results suggest that the presence of a chronic physical condition is negatively associated with mental health service use for complex needs patients – an ever growing part of the population with high healthcare costs and poor health outcomes.

Provisions within the Affordable Care Act (ACA) have underscore the need for integrated healthcare models. One such model is the patient centered medical home (PMCH), which requires primary care physicians to coordinate patients' complex health needs, such as mental illness and co-occurring chronic conditions, with multiple providers. Demand for primary care providers is likely to increase as a result of ACA implementation. The role of primary care providers has become pivotal in care coordination for complex needs patients¹⁰. Also, integrative care is expected to increase coordination in decision-making among providers treating complex needs patients.²⁸ As other studies of complex needs patients have suggested, current healthcare practices during the primary health care office

visit may need to change to better address the needs of this population²⁹. For example, medical practices allowing additional time during the office visit may better address these patients' complex needs and ultimately ensure proper treatment of both mental and physical health conditions.

Similar to prior research, we found that Hispanics were less likely to receive mental health treatment compared to whites.³⁰ However in the current study, those differences disappeared when individual, healthcare setting and contextual factors were held constant. The authors explored potential racial/ethnic differences on service use through bivariate analysis while relying on the Agency for Healthcare Research and Quality definition of health disparities, which adjusts for covariates in the analyses³¹.

Importantly, there were differences by race/ethnicity in the settings where patients were treated; visits for white patients were more likely to occur in private practice settings and visits for racial/ethnic minority patients were more likely to occur in community mental health centers. These results underscore the importance of ensuring that community-based health centers are prepared to address the needs of complex patients, especially minority patients.

Study limitations include potential confounding due to unmeasured variables, including depressive severity or prior/ongoing mental health treatment receipt. We are unable to include individuals who are depressed but not diagnosed or those with remittent depression at the time of the visit. It is also possible that some office visit records did not accurately document a service referral and/or the presence of depression at the time of the visit or patients may not have accessed prescribed or referred services. Furthermore, we may underestimate mental health services use, particularly among individuals who are receiving ongoing treatment prior to the visit. NAMCS does not include information on the country of origin for Hispanics born outside the US. Therefore, the authors were unable to explore differences in service use based on country of origin for this ethnic group, nor were we able to explore documented differences in the prevalence of chronic illnesses between immigrant versus US born patients³². Racial disparities in mental health services use may occur at the point of access to care and once integrated within the health care system. We were unable to examine disparities in access to mental health care services. Instead, we examine racial disparities that occur among office visits.

As we move towards models of primary and integrated care, this line of research is important to ensure that racial disparities do not occur among patients who have accessed the health care system. The authors were unable to control for repeated visits by the same patient as the unit of analysis is the visit; however physician practices record visits for a single randomly selected week during each survey year, so duplication of patient-visits should be infrequent²².

Finally, because this study focuses only on office visits for patients ages 35–85, results may not be generalizable to visits for other age group. In addition, our selection criteria could have missed older adults with depression because these patients may be less likely to receive a depression diagnosis than younger adults.

Future studies should assess the effect of ACA provisions to promote integrated care as a way to increase access to services for patients with co-occurring mental illness and physical chronic health conditions. Integrated approaches to care ensure that services are coordinated across providers, functions, activities and sites over time³². This approach could better meet the health needs for complex patients^{33–35}. Having routine, coordinated office visits with primary health care providers offers a unique opportunity to identify health needs and better manage patients' health while avoiding duplication of services. A next step in this line of research is to examine whether the influence of chronic physical health needs on mental health service use differs by the type of physical condition. Additional research regarding barriers and facilitators of treatment for patients with co-occurring mental and chronic physical conditions is warranted, particularly as the health care system moves towards an integrated care model.

References

1. Kessler RC, Chiu WT, Demler O, et al. Prevalence, Severity, and Comorbidity of 12-Month DSM-IV Disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiat*. 2005; 62(6):617. [PubMed: 15939839]
2. Colton CW, Manderscheid RW. Congruencies in increased mortality rates, years of potential life lost, and causes of death among public mental health clients in eight states. *Prev Chronic Dis*. 2006; 3(2):A42. [PubMed: 16539783]
3. Banerjee R, Sambamoorthi U, Smelson D, et al. Chronic Illness with Complexities: Mental Illness and Substance Use Among Veteran Clinic Users with Diabetes. *Am J Drug Alcohol Abuse*. 2007; 33(6):807–821. [PubMed: 17994477]
4. Bodenheimer, T.; Berry-Millet, R. [Accessed March 15, 2014] Care management of patients with complex health care needs: Research syntheses report. 2009. http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2009/rwjf49853/subassets/rwjf49853_1
5. Lichstein JC, Domino ME, Beadles CA. Use of Medical Homes by Patients With Comorbid Physical and Severe Mental Illness. *Med Care*. 2014; 52:S85–S91. [PubMed: 24561764]
6. Sterling S, Chi F, Hinman A. Integrating care for people with co-occurring alcohol and other drug, medical, and mental health conditions. *Alcohol Res Health*. 2011; 33(4):338–349. [PubMed: 23580018]
7. Lasser KE, Himmelstein DU, Woolhandler SJ, et al. Do minorities in the United States receive fewer mental health services than whites? *Int J Health Serv*. 2002; 32(3):567–578. [PubMed: 12211293]
8. Mensah GA, Mokdad AH, Ford ES, Greenlund KJ, Croft JB. State of disparities in cardiovascular health in the United States. *Circulation*. 2005; 111(10):1233–1241. [PubMed: 15769763]
9. Kurian AK, Cardarelli KM. Racial and ethnic differences in cardiovascular disease risk factors: a systematic review. *Ethnicity & disease*. 2007; (17):143–152. [PubMed: 17274224]
10. Starfield B, Lemke KW, Bernhardt T, et al. Comorbidity: implications for the importance of primary care in 'case' management. *Ann Fam Med*. 2003; 1(1):8–14. [PubMed: 15043174]
11. Hollingsworth JM, Saint S, Hayward RA. Specialty care and the patient-centered medical home. *Med Care*. 2011; 49(1):4–9. [PubMed: 20966777]
12. Valderas JM, Starfield B, Sibbald B, et al. Defining comorbidity: implications for understanding health and health services. *Ann Fam Med*. Jul-Aug;2009 7(4):357–363. [PubMed: 19597174]
13. Coventry P, Hays R, Dickens C, et al. Talking about depression: a qualitative study of barriers to managing depression in people with long term conditions in primary care. *BMC Family Practice*. 2011; 12(1):10. [PubMed: 21426542]
14. Simon GE, VonKorff M. Recognition, management, and outcomes of depression in primary care. *Archives of family medicine*. 1995; 4(2):99. [PubMed: 7842160]

15. Katon WJ, Lin EHB, Von Korff M, et al. Collaborative Care for Patients with Depression and Chronic Illnesses. *The New England journal of medicine*. 2010; 363(27):2611–2620. [PubMed: 21190455]
16. Boulton C, Reider L, Frey K, et al. Early effects of “Guided Care” on the quality of health care for multimorbid older persons: a cluster-randomized controlled trial. *J Gerontol A Biol Sci Med Sci*. 2008; 63(3):321–327. [PubMed: 18375882]
17. Gilbody S, Bower P, Fletcher J, Richards D, Sutton AJ. Collaborative care for depression: a cumulative meta-analysis and review of longer-term outcomes. *Archives of Internal Medicine*. 2006; 166(21):2314–2321. [PubMed: 17130383]
18. Thielke S, Vannoy S, Unützer J. Integrating Mental Health and Primary Care. *Primary Care: Clinics in Office Practice*. 2007; 34(3):571–592. [PubMed: 17868760]
19. Bodenheimer, T.; Berry-Millet, R. Care management of patients with complex health care needs: research syntheses report. Princeton, NJ: Nov. 2009
20. Ward BW, Schiller JS. Prevalence of Multiple Chronic Conditions Among US Adults: Estimates From the National Health Interview Survey, 2010. *Prev Chronic Dis*. 2013; 10:E65. [PubMed: 23618545]
21. Wang PS, Lane M, Olfson M, et al. Twelve-Month Use of Mental Health Services in the United States Results From the National Comorbidity Survey Replication. *Arch Gen Psychiatry*. 2005; 62(6):629. [PubMed: 15939840]
22. Gerhard T, Akincigil A, Correll CU, Foglio NJ, Crystal S, Olfson M. National trends in second-generation antipsychotic augmentation for nonpsychotic depression. *The Journal of Clinical Psychiatry*. 2014; 75(5):7.
23. Sclar DA, Robison LM, Schmidt JM, Bowen KA, Castillo LV, Oganov AM. Diagnosis of Depression and Use of Antidepressant Pharmacotherapy Among Adults in the United States. *Clinical Drug Investigation*. Feb; 2012 32(2):139–144. [PubMed: 22220929]
24. Jameson JP, Blank MB. Diagnosis and Treatment of Depression and Anxiety in Rural and Nonrural Primary Care: National Survey Results. *Psychiatric Services*. Jun; 2010 61(6):624–627. [PubMed: 20513688]
25. Statistics. NCFH. NAMCS MICRO-DATA FILE DOCUMENTATION. 2010.
26. StataCorp. Stata Statistical Software: Release 12. College Station, TX: StataCorp LP; 2011.
27. Cameron, CA.; Trivedi, PK. Microeconometrics using Stata. Stata Press; 2009.
28. Peek CJ. Integrating Care for Persons, Not Only Diseases. *J Clin Psychol Med Settings*. 2009; 16(1):13–20. [PubMed: 19259794]
29. Harman JS, Edlund MJ, Fortney JC, Kallas H. The Influence of Comorbid Chronic Medical Conditions on the Adequacy of Depression Care for Older Americans. *Journal of the American Geriatrics Society*. 2005; 53(12):2178–2183. [PubMed: 16398906]
30. Vyas BA, Sambamoorthi U. Multimorbidity and depression treatment. *General Hospital Psychiatry*. 2011; 33(3):7.
31. Agency for Healthcare Research and Quality. National Health Disparities Report. Rockville, MD: 2006.
32. Shortell, SM., et al., editors. Remaking health care in America: The evolution of organized delivery systems. 2. San Francisco: Jossey-Bass; 2000.
33. Katon WJ, Lin EHB, Von Korff M, et al. Collaborative Care for Patients with Depression and Chronic Illnesses. *New Engl J Med*. 2010; 363(27):2611–2620. [PubMed: 21190455]
34. Parthasarathy S, Mertens J, Moore C, et al. Utilization and cost impact of integrating substance abuse treatment and primary care. *Med Care*. 2003; 41(3):357–367. [PubMed: 12618639]
35. Jordan N, Sohn MW, Bartle B, et al. Association Between Chronic Illness Complexity and Receipt of Evidence-based Depression Care. *Med Care*. 2014; 52:S126–S131. [PubMed: 24561751]

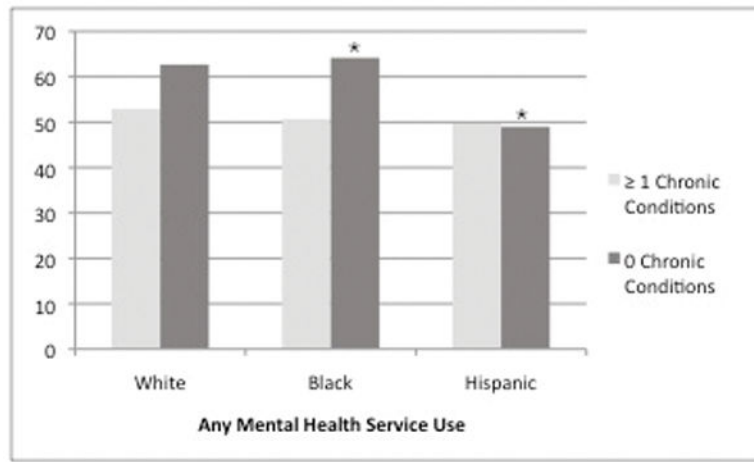


Figure 1. Weighted bivariate analyses by race and ethnicity, chronic vs. non-chronic conditions (n=3,659)
Note: **p<05

Table 1

Characteristics of Patient Visits Ages 35 – 85 with a Depression Diagnosis 2007 – 2010, by Race/Ethnicity

	White Only (n = 2,910)	Black (n = 335)	Hispanic (n = 414)	p value
Outcome variables				
Any mental health services (i.e., counseling and/or psychotropic medications)	55.3	52.8	49.5	0.07
Main Predictor				
Had at least one chronic condition	75.7	84.2	76.8	<0.01
Number of chronic conditions (0–13)	1.74±1.53	1.97±1.53	1.69±1.47	
Top three prevalent conditions				
Hypertension	42.6	57.3	44.44	<.01
Hyperlipidemia	34.4	24.5	30.7	<.01
Arthritis	22.2	22.4	17.3	.08
Covariates				
Time in minutes spent during the office visit	20.6±12.5	19.4±9.7	20.2±9.72	0.17
Age	55.5 ± 12.7	53.1 ± 11.4	53.4±12.2	<0.01
Gender: Female	70.5	74.3	68.8	0.24
Insurance Status				
Private (referent)	56.6	27.2	36.2	
Medicare	29.3	25.1	18.8	
Medicaid	15.4	39.1	31.4	
Self-pay	7.8	10.1	11.8	
Other ^a	2.9	5.7	8.2	
Contextual variables				
Poverty >10% in patient's zip code	42.0	68.1	69.6	<0.01
Metropolitan Statistical Area (MSA)				
Urban (referent)	75.6	85.7	92.8	
Rural	24.4	14.3	7.2	
Type of office setting				
Private solo/group practice/HMO	73.0	35.8	46.4	
Community health center (referent)	21.6	60.5	50.0	
Other office setting ^b	5.4	4.2	3.4	

Notes:

^aOther insurance: Includes worker's compensation and no charge/charity.^bOther office setting: Freestanding clinic, mental health center, non-federal government clinic and faculty practice plan.

Table 2

Weighted Logistic regressions of chronic physical health condition on any mental health service use among office visits for patients with depression (n=3,659)¹

Variable	Any Mental Health Services AME ^a (95% CI)
Had at least one chronic condition	-0.06* [-0.11, -0.00]
Racial/ethnic group	
Black	-0.003 [-0.11, 0.10]
Hispanic	-0.05 [-0.13, 0.03]
Covariates	
Time spent during visit (min)	0.00 [-0.00, 0.00]
Gender: Female	0.02 [-0.03, 0.06]
Insurance status	
Medicare	-0.01 [-0.06, 0.03]
Medicaid	-0.10* [-0.17, -0.03]
Self-pay	-0.01 [-0.10, 0.07]
Other	-0.01 [-0.13, 0.12]
Contextual variables	
Percent >10% poverty level	0.01* [0.00, 0.02]
Urban metropolitan area	-0.02 [-0.09, 0.05]
Office setting: Private/group practice/HMO	-0.10** [-0.15, -0.03]

Notes:

¹ Models also controlled for year variables: 2007(referent), 2008, 2009 and 2010. AME = Average Marginal Effect.

* p<0.05;

** p<0.01.

^a Either counseling and/or psychotropic medications.