Relationship Between General Illness and Mental Health Service Use and Expenditures Among Racially-Ethnically Diverse Adults ≥65 Years

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Objectives: The association of general medical illness and mental health service use among older adults from racial-ethnic minority groups is an important area of study given the disparities in mental health and general medical services and the low use of mental health services in this population. The purpose of this report is to describe the impact of comorbid general medical illness on mental health service use and expenditures among older adults and to evaluate disparities in mental health service use and expenditures in a racially-ethnically diverse sample of older adults with and without comorbid general medical illness.

Methods: Data were obtained from the Medical Expenditure Panel Survey (years 2004–2011). The sample included 1,563 whites, 519 African Americans, and 642 Latinos (N=2,724) age ≥65 with probable mental illness. Two-part generalized linear models were used to estimate and compare mental health service use among adults with and without a comorbid general medical illness.

Results: Mental health service use was more likely for older adults with comorbid general medical illness than for those without it. Once mental health services were accessed, no differences in mental health expenditures were found. Comorbid general medical illness increased the likelihood of mental health service use by older whites and Latinos. However, the presence of comorbidity did not affect racial-ethnic disparities in mental health service use.

Conclusions: This study highlighted the important role of comorbid general medical illness as a potential contributor to using mental health services and suggests intervention strategies to enhance engagement in mental health services by older adults from racial-ethnic minority groups.

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The impact of mental illness on medical illness outcomes in older adulthood, in general, has been well documented (1–5). However, an equally important question pertains to the patterns of mental health treatment of older adults from racial-ethnic minority groups who have a comorbid general medical illness. The association of general medical illness and mental health service use among older adults is an important area of study given the racial-ethnic disparities in receipt of health care and the overall low use of specialty mental health services in this population (6–10).

Previous studies have shown a positive association between general medical illness and mental health service use and expenditures (11–13). Sambamoorthi and colleagues (11) found that Medicaid beneficiaries with comorbid depression and diabetes had significantly higher rates of antidepressant treatment than did patients with depression only. Similarly, Cook and colleagues (12) found that comorbid health conditions increased the likelihood of initiation of mental health services for persons in need of care. The increased use of mental health services means a greater financial burden incurred. Psychiatric patients with a comorbid general medical illness have significantly greater mental health expenditures than patients without a comorbid general medical illness (13).

Cook and colleagues (12) also examined the contribution of comorbid illness to racial-ethnic disparities in mental health service use. They found that racial-ethnic disparities in access to mental health care were smaller among those with comorbid conditions than among those without them. Although their study did not specifically focus on older adults, the sample included adults age 65 and older, which suggests that the presence of a comorbid condition may predict increased engagement in mental health services among older adults from racial-ethnic minority groups. In addition, there may be an association between comorbid medical illness and reduced racial-ethnic disparities in mental health service use. Prior research has highlighted racial-ethnic disparities in mental health expenditures (6,14). However, those studies did not specifically address the relationship between comorbid

general medical illness and disparities in mental health expenditures.

IOM DEFINITION OF DISPARITIES AND COMORBIDITIES

According to the Institute of Medicine (IOM), disparities in health care are racial or ethnic differences in the quality of health care that are not due to clinical needs, preferences, and appropriateness of interventions (15). To apply this conceptual model, researchers adjust for differences in clinical appropriateness, need, and preferences but not for differences resulting from other factors, such as the operation of health care systems and legal and regulatory climate discrimination. The IOM definition states that if the presence of a comorbid condition affects use only through need for care, then disparities analyses should adjust for comorbidities. However, Cook and colleagues (12) found evidence that comorbidities can be indicative of greater exposure to the health care system. In this study, we followed this framework and allowed difference in rates of comorbidities to enter into the disparities predictions as a system-level variable.

The purpose of this study was twofold. First, we assessed the relationship between a comorbid general medical illness and mental health service use and expenditures among older adults. Second, we evaluated disparities in mental health service use and expenditures in a racially and ethnically diverse sample of older adults with and without comorbid general medical illness. The following hypotheses were tested: first, that mental health service use would be greater among mentally ill older adults with a comorbid general medical illness compared with mentally ill older adults without a comorbid general medical illness, and second, that the presence of a comorbid medical condition would be associated with reduced racial-ethnic disparities in mental health service use.

METHODS

Study Population

The data were drawn from the Medical Expenditure Panel Survey (MEPS), a nationally representative sample of the noninstitutionalized civilian population of the United States. We combined six two-year longitudinal panels (panels 9–14), corresponding to calendar years 2004–2011. Approximately 15% of our weighted sample was missing data on one or more variables. Our final sample included 2,724 older (≥65) adults (1,563 whites, 519 African Americans, and 642 Latinos). To account for differential missingness by race-ethnicity, we reweighted the included individuals to represent their propensity to be like individuals with missing values (16,17) with probable mental health need.

The MEPS is an annual survey of approximately 15,000 households that has been conducted since 1996. It produces annual estimates and behavioral and economic analyses of health care use, expenditures, insurance coverage, sources of payment, access to care, and health care quality. Data are collected in five rounds of computer-assisted personal interviews that cumulatively cover a consecutive two-year period. Annual estimates are based on data from three separate interviews for each person in the sample. Self-reported information is subsequently verified and completed by the Agency for Healthcare Research and Quality. Records provided by hospitals, health maintenance organizations, office-based providers, home care agencies, and pharmacies are reviewed by staff trained to abstract the core data elements for each provider type. Individual respondent information on expenditures provided in the Household Component of the MEPS is always replaced by provider information because the provider information is considered to be more complete and less prone to reporting errors. Trained staff resolved other discrepancies at their discretion (18).

The MEPS contains household-reported diagnosis information for every individual reported to have a health care visit, pharmaceutical fill, or limitation of activity. Any time a respondent mentions that a visit, fill, or activity limitation has occurred, the surveyor follows up by asking the name of the illness linked to that event or limitation. The response is then translated into an *ICD-9* code and reported in the MEPS. For our purposes, we considered mental health care to be all reported events and activity limitations that were specifically linked to *ICD-9* codes related to mood, anxiety, psychotic, substance use, personality, behavioral, and developmental disorders (codes 291, 292, or 295–314) (19). This method is shown to have strong sensitivity (88%) to provider reports of treatment for behavioral disorders (20). All study methods and protocols were approved by the institutional review board of Cambridge Health Alliance.

Dependent Variables

Dependent variables were a dichotomized measure of any mental health service use and a continuous measure of mental health expenditures if there was mental health service use. Mental health service use was defined as engaging in specialty mental health care (from a psychiatrist, psychologist, counselor, or social worker), general medical provider care (primary care physician), emergency department visits, or inpatient hospitalization for mental health or substance abuse conditions. We considered a visit to primary care or an emergency department or an inpatient stay to be a mental health care visit if the treatment was recorded to be for a disorder covered by the *ICD-9* codes specified above. Mental health expenditures were measured by summing all direct payments for mental health care provided, including out-of-pocket payments and payments by private insurance, Medicaid, Medicare, and other sources. Only persons who engaged in mental health services were factored into the expenditures analyses.

Independent Variables

Racial-ethnic categories (white, African American, and Latino) were based on U.S. Census definitions. Participants with mental health need were defined as those with a score greater than 12, indicating nonspecific psychological distress, on the Kessler-6 Scale (K6) (21) or a score greater than 2, indicating probable depressive disorder, on the Patient Health Questionnaire–2

TABLE 1. Characteristics of 2,724 adults ≥65 with probable mental illness with or without comorbid general medical illness[a]

Characteristic	Comorbid illness (N=2,446; %)	No comorbid illness (N=278; %)
Race-ethnicity[b]		
White	57	59
African American	19	16
Latino	23	25
Mental health status		
SF-12 mental component score (M±SD)[c]	35.8±9.6	36.9±9.9
PHQ-2 score (M±SD)[d]	4.0±1.2	3.8±1.2**
Kessler-6 score (M±SD)[e]	12.5±4.9	11.0±5.2**
Self-rated mental health[b]		
Excellent	8	10
Very good	17	21
Good	35	33
Fair	29	24
Poor	12	12
Health status		
SF-12 physical component score (M±SD)[f]	30.4±10.0	38.5±11.8**
Self-rated general health[b]		
Excellent	4	14**
Very good	12	25**
Good	26	31
Fair	34	20**
Poor	24	11**
Any work limitation	88	69**
Sex		
Male	40	43
Female	60	57
Age		
60–74	45	49
≥75	55	51
Marital status		
Married	48	49
Single	52	51
Socioeconomic status (% federal poverty level)		
<100%	16	13
100%–124%	11	9
125%–199%	25	24
200%–399%	30	33
≥400%	18	21
Education[b]		
Less than high school	41	44
High school graduate	34	32
Any college	14	16
College graduate	12	8
Health insurance[g]		
Medicaid	22	13**
Medicare	99	98
Uninsured	0	2*
Region[b]		
Northeast	18	15
Midwest	20	19
South	42	41
West	19	26*
Urbanicity: in MSA[h]	76	80

[a] Source: Panels 9–14 of the 2004–2011 Medical Expenditure Panel Survey. Percentages are weighted.
[b] Percentages may not equal 100% due to rounding.
[c] From the 12-Item Short Form. Possible scores range from 0 to 100, with higher scores indicating higher level of mental health.
[d] Two-item Patient Health Questionnaire. Possible scores range from 0 to 6, with higher scores indicating probable depressive disorder.
[e] Possible scores range from 0 to 24, with higher scores indicating nonspecific psychological distress.
[f] From the 12-Item Short Form. Possible scores range from 0 to 100, with higher scores indicating higher level of physical health.
[g] Enrollment in Medicare and Medicaid was not mutually exclusive.
[h] Metropolitan statistical area
*p<.05, **p<.01

(PHQ-2 [22]). Participants with a comorbid general medical illness were defined as those with mental health need plus one or more of ten priority chronic illnesses (diabetes, asthma, stroke, emphysema, arthritis, coronary heart disease, angina, myocardial infarction, other heart disease, and obesity). We also included income, education, health insurance, participation in a health maintenance organization, U.S. region of residence, employment status, and residence in a metropolitan statistical area.

Statistical Analyses

Using a four-step process, we estimated racial-ethnic and comorbidity differences in mental health service use and expenditures that were not due to differences in severity of illness for mental health care. First, we estimated a regression model of any mental health care (logistic regression for dichotomous dependent variables and generalized linear models with log link and gamma distribution for the variance of continuous dependent variables), adjusting for all independent variables described above. Second, using a rank-and-replace method, we transformed distributions of need variables described above to be equal across racial-ethnic groups (14,23). Third, we estimated a prediction of the rate or mean of the dependent variable of interest for each comorbidity and racial-ethnic group by multiplying the coefficient from the original model by the independent variable values (transformed in the case of need variables) and averaging the predictions across the two groups. Fourth, we compared predicted mental health use between racial-ethnic and comorbidity groups.

Statistical differences between groups and standard errors were calculated with nonparametric bootstrap resampling techniques with 100 replications to ensure parameter stability (24). Coefficients from the regression models described in step 2 provided an independent effect of race-ethnicity and comorbidities, with adjustment for all independent variables.

TABLE 2. Predicted probabilities of mental health service use and expenditures among adults ≥65 with probable mental illness with or without comorbid general medical illness[a]

General medical condition	Mental health service use (%)[b] (N=2,724)		Mental health expenditures ($)[c] (N=969)	
	Estimate	SE	Estimate	SE
Comorbidity	40	1	1,163.02	95.10
None	28	4	1,101.11	397.27
Difference[d]	12*	4	61.91	409.66

[a] Source: Panels 9–14 of the 2004–2011 Medical Expenditure Panel Survey
[b] Defined as engaging in outpatient care, prescription drug care, specialty mental health care (with psychiatrist, psychologist, counselor, or social worker), or general medical care (primary care physician) for mental health or substance abuse issues
[c] Annual expenditures for mental health care, including out-of-pocket payments and payments by private insurance, Medicaid, Medicare, and other sources
[d] Difference in service use and expenditures estimates between persons with and without a comorbid general medical condition
*p<.05

Comparisons of mean predicted probabilities by comorbidity after adjustment for only mental health need variables (step 4) provided disparity results concordant with the IOM definition of health care disparities (15). Both types of results are presented.

RESULTS

Health and Sociodemographic Characteristics

Table 1 summarizes health status and sociodemographic characteristics among older adults with and without a comorbid general medical illness. When compared with older adults without medical comorbidity, those with comorbidity were more likely to endorse depressive symptoms (PHQ-2) and distress (K6), had poorer self-rated general health, and had greater rates of Medicaid enrollment.

Comorbidities and Mental Health Service Use and Expenditures

Older adults with a comorbid general medical illness were significantly more likely to use mental health services than older adults without a comorbid general medical illness (40% versus 28%) after adjustment for need (Table 2). Among those who accessed mental health services, there was no significant difference in annual mental health expenditures between those with and without comorbid conditions ($1,163.02 versus $1,101.11, respectively).

Disparities in Mental Health Service Use and Expenditures

Table 3 shows mental health service use among older persons by race-ethnicity and by presence or absence of comorbid general medical illness, after adjustments for need for mental health services. Whites with a comorbid general medical illness used mental health services significantly more than did African Americans (44% versus 21%) or Latinos (34%) with a comorbid general medical illness. Use of mental health care was significantly greater among whites without a comorbid medical illness (34%) than among African Americans (16%) or Latinos (16%) without a comorbid general medical illness. Among persons who used mental health services, there were no significant racial-ethnic differences in expenditures for those services.

Whites with a comorbid general medical illness had significantly greater mental health service use compared with whites without a comorbid general medical illness (44% versus 34%). Latinos with a comorbid general medical illness had significantly greater mental health service use than Latinos without a comorbidity (34% versus 16%). No differences in mental health service use were observed between African Americans with a comorbid general medical illness and African Americans without a comorbid general medical illness (21% versus 16%).

The difference in mental health service use between whites with a comorbid general medical illness and whites without a comorbid general medical illness (10%) was not significantly different from the difference in mental health service use between African Americans with and without a comorbid general medical illness (5%). The difference in mental health service use between whites with a comorbid general medical illness and whites without a comorbid general medical illness (10%) was not significantly different

TABLE 3. Mental health service use and expenditures of white, African-American, and Latino adults ≥65 with probable mental illness with or without comorbid general medical illness[a]

General medical condition	Mental health service use (%)[b]						Mental health expenditures ($)[c]					
	Whites (N=1,563)		African Americans (N=519)		Latinos (N=642)		Whites (N=669)		African Americans (N=107)		Latinos (N=193)	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Comorbidity	44	2	21[d]	3	34[d]	3	1,100.98	86.81	1,179.19	281.74	1,601.82	271.68
None	34	5	16[d]	7	16[d]	6	859.00	144.48	3,400.79	2,864.48	2,266.32	1,796.47
Difference[e]	10[f]	5	5	8	18[f]	6	241.98	168.45	−2,221.60	2,878.30	−664.50	1,816.90

[a] Source: Panels 9–14 of the 2004–2011 Medical Expenditure Panel Survey
[b] Defined as engaging in outpatient care, prescription drug care, specialty mental health care (psychiatrist, psychologist, counselor, or social worker), or general medical care (primary care medical doctor) for mental health or substance abuse issues
[c] Annual expenditures for mental health care, including out-of-pocket payments and payments by private insurance, Medicaid, Medicare, and other sources
[d] Significant disparities between racial-ethnic groups at p<.05
[e] Difference in service use and expenditures estimates between persons with and without a comorbid general medical condition
[f] Significant difference within racial-ethnic group at p<.05

TABLE 4. Coefficient estimates from logistic regression models of mental health service use among older adults with probable mental illness with comorbid general medical illness[a]

	Service use (N=2,724)		Expenditures (N=969)	
Variable	Coefficient	SE	Coefficient	SE
Race-ethnicity (reference: white)				
African American	−1.10	.66	1.40	.85
Latino	−.91	.50	.99	.97
General medical comorbidity	.41	.24	.05	.21
Interaction (reference: whites)				
African-American comorbidity	−.06	.70	−1.40	.88
Latino comorbidity	.51	.51	−.57	1.13
Mental health status				
SF-12 mental component[b]	−.04**	.01	−.01	.01
PHQ-2 score[c]	.05	.05	.05	.08
Kessler-6 score	−.01	.02	−.01	.02
Self-rated mental health (reference: excellent)				
Very good	.33	.26	.13	.33
Good	.38	.24	−.02	.33
Fair	.86**	.24	−.02	.32
Poor	.83**	.26	.19	.33
SF-12 physical component	.01	.01	−.01	.01
Self-rated general health (reference: excellent)				
Very good	−.05	.36	.03	.37
Good	−.02	.31	.46	.31
Fair	.04	.32	.32	.33
Poor	.10	.32	.49	.34
Any work limitation (reference: no work limitation)	.35*	.17	.16	.17
Other covariates				
Female (reference: male)	.47**	.15	.11	.17
Age ≥75 (reference: 60–74)	−.55**	.12	−.06	.18
Married (reference: not married)	−.09	.14	−.23	.14
% federal poverty level (reference: <100%)				
100%–124%	−.09	.19	.06	.33
125%–199%	.11	.17	.07	.20
200%–399%	.25	.18	−.10	.22
≥400%	−.08	.21	.22	.22
Education (reference: less than high school)				
High school graduate	.02	.16	−.05	.18
Any college	.34	.19	.38	.20
College graduate	.20	.23	.76**	.24
Health insurance (reference: private insurance)				
Medicaid	.02	.18	.19	.21
Medicare	−.11	.51	−.70	1.30
Uninsured	−.98	1.30	−.66	1.31
Region (reference: Northeast)				
Midwest	.29	.20	−.14	.26
South	.01	.18	−.30	.20
West	.20	.20	−.15	.25
Urbanicity: in MSA (reference: not in MSA)[d]	.04	.14	−.31	.19
Constant	−.71	.91	7.70**	1.70

[a] Source: Panels 9–14 of the 2004–2011 Medical Expenditure Panel Survey
[b] 12-Item Short Form
[c] Patient Health Questionnaire
[d] Metropolitan statistical area
*p<.05, **p<.01

from the difference in mental health service use between Latinos with and without a comorbid general medical illness (18%). These results indicate that the presence of a comorbid condition was not significantly associated with a reduction in racial-ethnic disparities in mental health service use. Among those who engaged in mental health services, no significant disparities were found in mental health expenditures.

Regression Model Results

As shown in Table 4, after we adjusted for all (both need and system-level) covariates, we found that women, those who rated their mental health as fair or poor, and those who experienced any work limitations were more likely than others to use mental health services. Conversely, we found that the mental health component scale score of the 12-Item Short Form was a negative predictor of mental health service utilization. With regard to mental health expenditures, being a college graduate and living in a metropolitan area were predictive of increased mental health expenditures.

DISCUSSION

Our results highlight the significant impact that a comorbid general medical illness has on the use of mental health services by older adults. Our hypothesis that older adults with mental illness and a comorbid general medical illness would be more likely to use mental health services was supported. We also found that expenditures, given engagement in mental health treatment, were not greater among older adults with a comorbid condition compared with older adults without one. These latter results provide preliminary evidence that mental health services for older adults are being provided equally whether or not they have a comorbid general medical condition, if they have accessed the mental health care system.

As in previous studies (11–13), we found that older adults with a comorbid general medical illness used mental health services at a greater rate than those without a comorbid general medical illness. The exposure hypothesis may help explain these results. It states that if physicians spend more time with specific patients because of the care needed to treat comorbid general medical conditions, then the likelihood of seeking mental health care for those in need of such care will also improve (11–13). In the context of our study, older adults with a chronic general medical illness may have seen their physicians more frequently, and this exposure to the health care system may have increased the likelihood that their mental health needs were recognized and treated.

In contrast to the Cook and colleagues study (12), we did not find that the presence of a comorbid general medical condition was significantly associated with reduced racial-ethnic disparities in mental health service use. Significant racial-ethnic disparities persisted regardless of comorbidity category, and Latinos and African Americans without a comorbidity had especially low rates of mental health service use. Many older persons from racial-ethnic minority groups view use of traditional mental health services as highly stigmatizing (25–27). In addition, available mental health treatments may not match the preferences, values, and beliefs of older members of racial-ethnic minority groups, which can lead to the decision to not access mental health treatment (28,29). For Latinos and African Americans, the lack of a comorbid general medical illness may also limit exposure to the health care system. This lack of exposure, combined with the high degree of stigma and differing mental health beliefs, may contribute to the especially low rates of mental health service use among Latinos and African Americans without a comorbidity. These results underscore the need for interventions that promote greater access to mental health services among older adults from racial-ethnic minority groups and for interventions specifically designed to address their beliefs and stigmatizing attitudes toward traditional mental health services.

Effective approaches to this challenge are likely to involve using nontraditional means that are acceptable and scalable in this population. One such strategy is the use of health promotion interventions. Health promotion interventions (such as getting adequate nutrition and increasing physical activity) are behaviorally activating, bring mental health benefits to older adults faced with health-related challenges (30–32), and may be more desirable than treatment with medications (28). The emphasis on treating mental health problems through health and wellness techniques could also appeal to older adults from racial-ethnic minority groups because these techniques may seem less stigmatizing and more culturally acceptable than typical mental health services (30).

Overall, the rates of accessing mental health care were extremely low in this sample of older adults with mental health need. As with the general population, more effort should go toward encouraging access to mental health services and integrating mental health care with more often used primary care. The focus on integration may help to circumvent the lower rates of engagement in mental health services by older adults (33,34).

The study findings should be interpreted in the context of the limitations in our data. First, the lack of significant findings may be a result of the small sample. Although the MEPS has sufficient numbers of racial-ethnic minority cases to estimate mental health service disparities with precision, the subset we created with records for older adults (≥65) with probable mental health need was small and limited our ability to make definitive conclusions. Second, we interpreted a psychotropic medication prescription as mental health treatment. This assumption could have led to false positives because some psychotropic medications are used to treat nonpsychiatric conditions (35,36). Third, mental health need was determined by two brief screening measures of mental illness, not by structured diagnostic measures or measures of symptom severity. This has the potential of misrepresenting the population in need of mental health care. However, these measures have good sensitivity and specificity to diagnosis of mental disorders and nonspecific psychological distress. Fourth, because of the sample size limitations, we were unable to do a subanalysis by type of mental health services (that is, primary care versus specialty mental health care). Given that older adults from racial-ethnic minority groups tend to seek mental health services in a wider variety of settings compared with whites (6), having one variable for mental health service use may be too broad and may mask important differences.

Despite the aforementioned limitations, our results suggest potential directions for further inquiry. For example, mental health symptom severity measures (such as the Patient Health Questionnaire–9 and the Beck Depression Inventory) as well as physiological measures (such as fasting blood glucose) could be added to track patient progress. Doing so would help determine whether the participants with comorbid conditions who are receiving versus not receiving mental health services are improving. Expanding the mental health services variable to include informal emotional support provided by family members would provide insight into the various types of mental health care that older members of racial-ethnic minority groups are receiving.

CONCLUSIONS

This study highlights the important role of comorbid general medical illness as a potential contributor to the use of mental health services, and we have suggested intervention strategies to enhance engagement in mental health services among older adults from racial-ethnic minority groups. Designing interventions to treat mental health problems with general medical health and wellness techniques could be an effective, culturally acceptable strategy to engage older persons from racial-ethnic minority groups in mental health services. Such targeted health promotion interventions hold the potential to positively affect mental health service use in a population that experiences a greater burden of social and medical disadvantages.

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