Are Psychiatrists' Characteristics Related to How They Care for Depression in the Medically Ill?

Results From a National Case-Vignette Survey

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The authors' goal was to examine the relationship between psychiatrists' characteristics and their decisions regarding depression care. A national sampling of 278 psychiatrists answered diagnosis and treatment questions for one of four case vignettes with depression and various degrees of medical comorbidity. They also responded to a questionnaire assessing practice and demographic characteristics. Tendency to diagnose major depression was significantly associated with being board certified, being in practice for less time, having a greater percentage of patients with managed care, and having a greater percentage of patients on psychotropic medications. Tendency to recommend an antidepressant was significantly associated with the psychiatrist being male, being less satisfied with practice, and having a greater percentage of patients on psychotropic medications. These findings remained significant even after controlling for case characteristics. Diagnostic and prescribing tendencies of psychiatrists appear to be associated with specific physician characteristics and not simply case characteristics. These findings have implications for further studies of predictors of quality of care. (Psychosomatics 2001; 42:482–489)

In recent years there has been increasing attention given to physician practice patterns and quality of care in general health services research, but little in mental health. In psychiatry, previous practice pattern research has included large-scale pharmaco-epidemiologic studies,[1,2] analysis of computerized pharmacy records,[3] description of current psychiatric practice,[4–8] and physician surveys.[9–11] In the 1988–89 American Psychiatric Association (APA) Professional Activities Survey,[12,13] tendency to prescribe medication was associated with being younger, being male, and having larger caseloads.[14] In a prior small study, our group found that psychiatrists who were in solo practice and who had been out of training longer had a lower likelihood of agreeing with an expert panel for diagnostic and treatment plans.[15] Recently, West et al.[16] used data from the APA Practice Research Network's (PRN's) 1997 study of psychiatric patients and treatments to determine the relationship of psychiatrists' characteristics with rates of nonconformance with practice guideline psychopharmacologic recommendations for major depressive disorder. They found that nonconformance was associated with lack of financial incentives, relatively low or relatively high pro-

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portions of patients who were publicly insured, nonmanaged health plans, and age of 62 or older.

Despite these efforts, there has been little research on physician characteristics that might be associated with quality of psychiatric care. This paper focuses on how individual physician characteristics might be associated with practice variation in the recognition and treatment of depressed patients. Because many psychiatric outpatients with depression have medical illness comorbidity,[8,17] we evaluated quality of care for clinical scenarios that had various combinations of depression and medical illness comorbidity. We used standardized patient vignettes because this methodology allowed us to control for the potential effect of case mix variation on psychiatrists' recommendations. Our aim was to examine the relationship between physician characteristics and two decision outcomes: diagnosis of major depression and prescription of an antidepressant.

METHOD

A total of 525 psychiatrists listed in the APA membership directory were randomly sampled in 1996. Psychiatrists received $5 for completion of the survey, or they could designate that the money be sent to a national mental health charitable organization. If there was no response to the initial mailing within 2 weeks, the psychiatrists were telephoned up to three times to request survey completion.

The first portion of the survey assessed demographic and practice information, including gender, age, years of practice, practice setting, practice location, percentage of managed care, psychiatric subspecialty training, satisfaction with clinical practice, percentage of patients taking nonpsychiatric medications, and percentage of patients for whom the psychiatrist was currently prescribing one or more psychotropic agent.

The second portion of the survey consisted of case vignettes of a depressed individual with various degrees of medical illness severity (see Appendix). The four case vignettes were drafted by the investigators. All vignettes were reviewed by academic psychiatrists, internists, and oncologists for medical clarity and appropriateness. For each case the depression and background information was kept as uniform as possible so that only medical illness variables differed from case to case. *Case 1* was medically healthy; *Case 2* had mild arthritis and a remote history of early stage breast cancer; *Case 3* had moderately severe arthritis and early stage breast cancer that was diagnosed 2 years earlier; and *Case 4* had breast cancer metastatic to bone.

The investigators appointed an expert panel of four national leaders in consultation-liaison psychiatry. Expert judgments were made by consensus agreement in a series of conference calls. The panel determined with 100% agreement that for the first three cases, the leading diagnosis was major depressive disorder. For the fourth case, leading diagnoses were major depressive disorder, substance-induced mood disorder, delirium, and dementia. For each of the four cases, the expert panel had 100% agreement on providing psychotherapy and prescribing a serotonin reuptake inhibitor.

Each sampling of psychiatrists was randomly assigned to complete one of the four cases. Each case was followed by six structured questions, including assessment of the likelihood (1 = not at all likely; 5 = extremely likely) of the following psychiatric diagnoses: adjustment disorder with depressed mood, major depressive disorder, dysthymic disorder, mood disorder due to a general medical condition, substance-induced mood disorder, dementia, and delirium. They were also asked whether they would recommend psychotherapy (yes or no) and treatment with an antidepressant (yes or no).

Statistical Analyses

The two outcome variables in this study were the diagnosis of the case (depressed/not depressed) and the decision to prescribe an antidepressant (yes/no). The depression diagnosis variable was created by transforming the 5-point Likert scale response into a dichotomous response (1–3 = Not Depressed, 4 or 5 = Depressed). The decision to dichotomize these variables was based on an examination of histograms. (Because virtually all psychiatrists recommended psychotherapy, this treatment decision was not analyzed as an outcome variable.) Differences across the four case vignettes in the probability of diagnosing depression or prescribing an antidepressant were examined using likelihood-ratio χ^2 tests. To examine the relationships between the physician characteristics and each outcome controlling for medical illness severity, we first conducted a logistic regression for each physician characteristic separately, adding the physician variable to a model already containing the case variable. To determine how each physician variable was related to the decision outcomes in the context of other physician variables, we developed multiple logistic regression models using forward-stepwise variable selection. Fractional polynomials[18] were used to de-

APPENDIX: CASE VIGNETTES

Case 1

A 52-year-old woman with a history of depression has been referred to you by a primary care physician colleague for evaluation of depression. She tells you that for the past 2 months she has been irritable, depressed, and having difficulty enjoying usual pleasurable activities most of the time each day, nearly every day. During this period she has had difficulty falling asleep, low energy, difficulty concentrating, and diminished appetite with 5-pound weight loss. She had enjoyed her work as an administrative assistant with one company for the past 10 years, but 6 months ago, due to downsizing, she had to leave the company to take another position which she dislikes. She is happily married and has two adult children. She believes that the major precipitants for this depressive episode are that she misses working with her prior colleagues and that she is dissatisfied with her current job.

Psychiatric History: Two previous similar episodes of depression, the first after she had her first child 25 years ago and the second after her father died of cancer 5 years ago. Brief periods of counseling were helpful both times. Has never taken psychotropic medications. No history of mania, alcohol abuse, or drug abuse.

Medical History: 1) Occasional mild headaches for years. 2) Menopause 3 years ago. 3) Mild arthritis with occasional stiffness. No disability. 4) Past history of hypertension but now normotensive. 5) Visit one month ago with the primary care physician; physical exam was normal, no lab tests or imaging performed.

Medications: Aspirin (650 mg) occasionally for arthritis.

Mental Status Examination: Well dressed, pleasant and cooperative. Mood is depressed, affect is restricted to the depressed range and she is tearful at times. No suicidal ideation or psychotic content. Speech is fluent and goal directed. No hallucinations or illusions. Mini-Mental State Exam score is 30/30. She is agreeable to continuing in treatment with you.

Case 2

A 52-year-old woman with a history of depression, arthritis, and hypertension has been referred to you by a primary care physician colleague for evaluation of depression. She tells you that for the past 2 months she has been irritable, depressed, and having difficulty enjoying usual pleasurable activities most of the time each day, nearly every day. During this period she has had difficulty falling asleep, low energy, difficulty concentrating, and diminished appetite with 5-pound weight loss. She had enjoyed her work as an administrative assistant with one company for the past 10 years, but 6 months ago, due to downsizing, she had to leave the company to take another position, which she dislikes. She has had little interest in pursuing another job. She is happily married and has two adult children. She believes that the major precipitants for this depressive episode are that she misses working with her prior colleagues, she is dissatisfied with her current job, and she is distressed by her physical problems.

Past Psychiatric History: Two previous similar episodes of depression, the first after she had her first child 25 years ago, and the second after her father died of cancer 5 years ago. Brief periods of counseling were helpful both times. Has never taken psychotropic medications. No history of mania, alcohol abuse, or drug abuse.

Medical History: 1) Arthritis. Intermittent mild pain and stiffness. Difficulty walking for long periods. 2) Menopause 3 years ago. 3) Hypertension. Well controlled. 4) Breast cancer. Diagnosed 10 years ago. Small tumor with negative lymph nodes. Had lumpectomy and radiation. 5) Visit 1 month ago with the primary care physician; physical exam was normal, no lab tests or imaging performed.

Medications: 1) Ibuprofen (400 mg tid) for 6 months. Helps with arthritis pain. 2) Atenolol (50 mg qd) for 4 months for hypertension.

Mental Status Examination: Well dressed, pleasant and cooperative. Mood is depressed, affect is restricted to the depressed range and she is tearful at times. No suicidal ideation or psychotic content. Speech is fluent and goal directed. No hallucinations or illusions. Mini-Mental State Exam score is 30/30. She is agreeable to continuing in treatment with you.

Case 3

A 52-year-old woman with a history of depression, breast cancer, arthritis and hypertension has been referred to you by a primary care physician colleague for evaluation of depression. She tells you that for the past 2 months she has been irritable, depressed, and having difficulty enjoying usual pleasurable activities most of the time each day, nearly every day. During this period she has had difficulty falling asleep, low energy, difficulty concentrating, and diminished appetite with 5-pound weight loss. She had enjoyed her work as an administrative assistant with one company for the past 10 years, but 6 months ago, due to downsizing, she had to leave the company to take another position, which she dislikes. She has had little interest in pursuing another job. She is happily married and has two adult children. She believes that the major precipitants for this depressive episode are that she misses working with her prior colleagues, she is dissatisfied with her current job, and she is distressed by her physical problems.

Past Psychiatric History: Two previous similar episodes of depression, the first after she had her first child 25 years ago, and the second after her father died of cancer 5 years ago. Brief periods of counseling were helpful both times. Has never taken psychotropic medications. No history of mania, alcohol abuse, or drug abuse.

Medical History: 1) Arthritis. Moderately limits her activities. Moderate chronic pain. 2) Menopause 3 years ago. 3) Hypertension. Well controlled. 4) Breast cancer. Diagnosed 2 years ago. Small tumor. Estrogen receptor positive. Two positive lymph nodes but no further spread. Had lumpectomy, radiation and chemotherapy. 5) Visit 1 month ago with the primary care physician; physical exam, CBC, electrolytes, calcium, and liver function tests were normal.

Medications: 1) Naproxen (500 mg bid) for 3 years. 2) Tylenol #3 (acetaminophen plus codeine) 1-2 times daily for 6 months for arthritis pain. 3) Atenolol (100 mg qd) for years for hypertension. 4) Hydrochlorthiazide (HCTZ) (25 mg po qd) for years for hypertension. 5) Tamoxifen (10 mg bid) for 1.5 years for breast cancer.

Mental Status Examination: Well dressed, pleasant and cooperative. Mood is depressed, affect is restricted to the depressed range and she is tearful at times. No suicidal ideation or psychotic content. Speech is fluent and goal directed. No hallucinations or illusions. Mini-Mental State Exam score is 30/30. She is agreeable to continuing in treatment with you.

Continued

APPENDIX: CASE VIGNETTES *(continued)*

Case 4

A 52-year-old woman with a history of depression, breast cancer, and arthritis has been referred to you by an oncologist colleague for evaluation of depression. She tells you that for the past 2 months she has been irritable, depressed, and having difficulty enjoying usual pleasurable activities most of the time each day, nearly every day. During this period she has had difficulty falling asleep, low energy, difficulty concentrating, and diminished appetite with 5-pound weight loss. She had enjoyed her work as an administrative assistant with one company for the past 10 years, but 4 months ago she had to go on disability because of her worsening health. She is happily married and has two adult children. She believes that the major precipitants for this depressive episode are that she misses working with her prior colleagues and she is distressed by her physical problems.

Past Psychiatric History: Two previous similar episodes of depression, the first after she had her first child 25 years ago, and the second after her father died of cancer 5 years ago. Brief periods of counseling were helpful both times. Has never taken psychotropic medications. No history of mania, alcohol abuse, or drug abuse.

Medical History: 1) Metastatic breast cancer. Diagnosed 5 years ago. Received lumpectomy and radiation therapy. Multiple painful bone metastases discovered 4 months ago. Activities are severely limited. Medications give significant pain relief. Now undergoing chemotherapy. 2) Arthritis. 3) Menopause 3 years ago. 4) Visit 1 month ago with the oncologist; hematocrit was 30% (normal range 34%-44%), physical exam, CBC, electrolytes, calcium, and liver function tests were otherwise normal.

Medications: 1) Cytoxan and Adriamycin for breast cancer. 2) Morphine sulfate contin (MS Contin; 60 mg bid) for pain for 3 months. 3) Dilaudid (4 mg up to tid; average once per day) for breakthrough pain for 3 months. 4) Naproxen (500 mg bid) for 3 years.

Mental Status Examination: Well dressed, pleasant and cooperative. Appears weak and moderately sedated. Mood is depressed, affect is restricted to the depressed range and she is tearful at times. No suicidal ideation or psychotic content. Speech is fluent and goal directed. No hallucinations or illusions. Mini-Mental State Exam score is 26/30, as she missed 2 serial sevens and recalled 1 out of 3 objects. She is agreeable to continuing in treatment with you.

termine if transformation of continuous variables was necessary. Finally, the interaction between case and the percentage of patients on nonpsychiatric medications was tested for inclusion in the final model. Interactions among the final terms of each model were also evaluated. Model fit was judged using the Hosmer and Lemeshow goodness-of-fit χ^2 test.[19] Model fit was acceptable for both the diagnosis [$\chi^2(8) = 5.87$, $P = 0.66$] and medication [$\chi^2(8) = 2.65$, $P = 0.95$] decision logistic models. Results are expressed in terms of odds ratios (ORs) and 95% confidence intervals (CIs).

RESULTS

Sample Characteristics

The overall response rate was 53% ($n = 278$). The sampling was predominantly male (73.5%), with a mean ± SD age of 52.23 ± 9.91. Of the total sample, 35% spent more than 90% of their time on clinical work, 42% spent all time in private practice, and 56% worked in a solo practice setting. The distribution of practice locations was 59.6% urban, 29.6% suburban, and 10.7% rural. Psychiatrists with board certification comprised 88.8% of the sample. The average length of time in practice was 20.34 years (SD = 10.29), and the percent of patients in managed care averaged 32.51% (SD = 31.08). Psychiatrists reported that they prescribe psychotropic medications for an average of 74.59% (SD = 27.60) of patients in their practice.

In terms of the original 1–5 likelihood-of-diagnosis scale, the most likely diagnosis for all four cases was major depressive episode (range 4.0–4.4 across all cases), with adjustment disorder being the next most likely (range 3.0–3.4). Greater than 90% of psychiatrists recommended psychotherapy for all four cases. Table 1 displays the percentage of physicians who diagnosed depression and prescribed an antidepressant for each of the four cases. Diagnosis rates varied by case, with *Case 2* and *Case 3* having the higher rates. There was some suggestion that rates of prescribing antidepressants varied by case, although the differences did not reach statistical significance. Cases that were diagnosed with major depression were more likely to be prescribed antidepressants than cases not diagnosed with major depression [77% vs. 42%, $\chi^2(1) = 28.17$, $P = 0.001$].

Characteristics Related to Diagnosis of Major Depression

Table 2 displays physician characteristics that were significantly related to the diagnosis of major depression. The relationships shown are all adjusted for case differences. The decision to diagnose depression was significantly associated with board certification, younger age, fewer years in practice, greater percentage of patients in managed care, and greater percentage of patients on psychotropic medications. The multivariable major depression diagnosis model contained board certification (OR = 3.64; 95% CI = 1.58–8.40) and percentage of patients taking psychotropic medications (OR for 20-percentile-point increase = 1.39; 95% CI = 1.23–1.72).

Characteristics Related to Prescribing an Antidepressant

The decision to prescribe an antidepressant was significantly associated with male gender, lower satisfaction with practice, greater percentage of patients in managed care, greater percentage of patients taking psychotropic medications, and greater percentage of patients taking nonpsychiatric medications (Table 3). The multivariable model for prescription decisions included three effects. Female psychiatrists were less likely than male respondents to prescribe (OR = 0.37; 95% CI = 0.20–0.69), and very satisfied psychiatrists were less likely than less satisfied psychiatrists to prescribe (OR = 0.46; 95% CI = 0.25–0.86). Finally, the percentage of patients taking psychotropic medications was associated with an increased likelihood of prescribing antidepressants, but only for *Case 2* (OR for 20-percentile-point increase = 1.98; 95% CI = 1.32–2.97) and *Case 3* (OR = 2.84; 95% CI = 1.46–5.49).

Physician characteristics that were not statistically related to either decision outcome, and hence are not shown in Table 2 or Table 3, were spending greater than 90% of time on clinical work, spending all time in private practice, working only in a solo practice setting, and practicing in a particular location. The interaction between case and the physician's reported percentage of patients taking nonpsychiatric medications was not significant for either of the decision outcomes.

DISCUSSION

This study was undertaken to understand better the physician characteristics that may underlie practice variation in the care of individuals with depression. Using an ex-

TABLE 1. Rates of diagnosis of major depression and antidepressant prescribing by experimental case

Decision Outcome	Case 1	Case 2	Case 3	Case 4	χ^2 p Value (3 *df*)
Diagnose Major Depression, %	67	81	85	71	0.047
Prescribe Antidepressant, %	66	71	59	76	0.180

TABLE 2. Relationship between physician characteristics and the decision to diagnose major depression

Categorical Variable	Diagnosed Depression, %		OR[a]	95% CI[b]
Gender				
Female	79.17		1.26	
Male	74.87		1.00	0.65–2.45
Board certified				
Yes	80.08		**3.77**	
No	51.72		1.00	**1.67–8.53**
Satisfaction				
Dissatisfied	73.77		1.00	
Somewhat satisfied	76.83		1.12	0.59–2.11
Very satisfied	77.87		0.97	0.53–1.76
Continuous Variable	**Major Depression Not Diagnosed Mean ± SE**	**Major Depression Diagnosed Mean ± SE**	**OR[a]**	**95% CI[b]**
Age[c]	56.31 ± 9.39	50.89 ± 9.64	**0.59**	**0.43–0.81**
Years in practice[c]	24.30 ± 10.07	18.94 ± 9.93	**0.63**	**0.47–0.84**
Managed care,[d] (%)	27.09 ± 29.18	34.88 ± 31.46	**1.26**	**1.03–1.54**
Patients taking psychotropic meds,[d] (%)	64.94 ± 32.06	78.55 ± 24.05	**1.43**	**1.16–1.76**
Patients taking nonpsychiatric meds, [d] (%)	39.72 ± 24.48	45.84 ± 25.00	1.21	0.95–1.54

Note: Odds ratios and confidence intervals in boldface indicate significant results ($P<0.05$). For both decision outcomes, 1 = Yes, 0 = No. [a]Odds ratio after controlling for Case. [b]95% confidence interval for the odds ratio. A 95% CI that includes 1.00 means the OR does not significantly differ from zero. [c]Odds ratio is the increase in odds associated with a 10-year increase. [d]Odds ratio is the increase in odds associated with a 20-percentile-point increase.

perimental methodology that controlled patient characteristics, we identified several physician variables related to the diagnosis and pharmacological treatment of depression. Characteristics of physicians that were associated with the appropriate diagnosis of major depression included being board certified, having been in practice for a shorter period of time, prescribing more frequently in practice, and having a greater percentage of patients in managed care. In a recent study of general internists, board certification scores were found to be highly associated with quality of care.[20] The finding that length of practice is negatively correlated with the diagnosis of major depression is consistent with our prior research,[15] and suggests that older psychiatrists may be less familiar with DSM-IV. Self-reported prescribing frequency may be associated with the tendency to use a medical model (e.g., DSM-IV) in one's practice, but this was not measured. Those psychiatrists who participate more in managed care may have greater access to screening data or triage, guidelines issued by managed care organizations, and quality improvement initiatives. Therefore they may be more skilled in the diagnosis of depression.

What were the characteristics of the psychiatrists who tended to prescribe antidepressants? Not surprisingly, physicians who frequently prescribe psychotropics in their practices tended to prescribe for the case vignettes. The multivariable analysis suggests that this relationship holds for the cases with the least and most medical comorbidity but not the two cases in between. The reason for this interaction is not clear. Future research is necessary to isolate those aspects of medical comorbidity that are differentially related to psychotropic prescribing practices.

Those psychiatrists who have a greater percentage of patients taking nonpsychiatric medications also prescribed more frequently for the vignettes, perhaps reflecting a greater level of comfort with prescribing in the presence of medical comorbidity. Male psychiatrists tended to prescribe more frequently than female psychiatrists. Gender differences have been found in other studies of medical practice (e.g., outpatient diagnostic imaging).[21] Other researchers found that female gender was associated with increased rates of counseling for depression in primary care.[22] One limitation of our study is that the vignettes were of only female patients, so our findings may not be generalizable to decisions regarding male patients. Thus although it is possible that we have described gender differences in prescribing, it is also possible that this difference is related more to gender mismatch between physician and patient. It is also important to note that 90% of psychiatrists recommended psychotherapy for all vignettes and that no gender differences were found for psychotherapy recommendations. Future research is needed to determine if gender match or mismatch in psychiatric treatment is an important determinant of quality of care.

TABLE 3. Relationship between physician characteristics and the decision to prescribe an antidepressant

Categorical Variable	Prescribed, %		OR[a]	95% CI[b]
Gender				
Female	50.68		**0.36**	
Male	74.37		1.00	**0.20–0.63**
Board certified				
Yes	68.35		1.50	
No	60.00		1.00	0.68–3.29
Satisfaction				
Dissatisfied	77.05		1.00	
Somewhat satisfied	74.39		1.58	0.88–2.85
Very satisfied	59.68		**0.47**	**0.27–0.81**
Continuous Variable	**Antidepressent Not Prescribed Mean ± SE**	**Antidepressant Prescribed Mean ± SE**	**OR[a]**	**95% CI[b]**
Age[c]	52.26 ± 10.61	52.19 ± 9.57	0.95	0.72–1.25
Years in practice[c]	20.08 ± 10.72	20.28 ± 10.01	1.00	0.77–1.30
Managed care,[d] (%)	26.05 ± 30.33	35.78 ± 31.11	**1.27**	**1.06–1.52**
Patients taking psychotropic meds,[d] (%)	61.89 ± 31.87	80.61 ± 23.23	**1.64**	**1.35–2.00**
Patients taking nonpsychiatric meds, [d] (%)	38.56 ± 23.88	46.72 ± 25.06	**1.34**	**1.07–1.67**

Note: Odds ratios and confidence intervals in boldface indicate significant results ($P<0.05$). For both decision outcomes, 1 = Yes, 0 = No. [a]Odds ratio after controlling for Case. [b]95% confidence interval for the odds ratio. A 95% CI that includes 1.00 means the OR does not significantly differ from zero. [c]Odds ratio is the increase in odds associated with a 10-year increase. [d]Odds ratio is the increase in odds associated with a 20-percentile-point increase.

Psychiatrists with a greater percentage of managed care were more likely to prescribe an antidepressant for the case vignettes, a finding consistent with West et al.'s analysis of the APA PRN data.[16] In our study, the correlation between the percentage of their patients in managed care and psychotropic prescribing tendency in one's own practice was 0.19 ($P<0.005$). Thus it appears that psychiatrists who participate in managed care not only are more likely to prescribe in actual clinical practice but also have a greater tendency to prescribe than other psychiatrists for identical patients. This tendency to prescribe might be related to the fact that, for managed care patients, psychiatrists often solely provide medication management and nonphysician mental health providers perform psychotherapy. An alternative explanation might be that provider profiling results in the retention on managed care panels of psychiatrists who tend to recommend pharmacotherapy.

Less-satisfied physicians were also more likely to prescribe an antidepressant for the case vignettes. One interpretation for this finding is that psychiatrists who prescribe frequently are less satisfied because they have less time to perform more satisfying aspects of psychiatric care (e.g., psychotherapy). However, in our background survey the correlation between psychotropic prescribing and satisfaction was essentially zero ($r = -0.08$, $P = 0.19$). Further research is needed to confirm our findings and to delineate the potential mechanisms underlying this association, which were not measured in our study.

Our study has several limitations. First, our response rate of 53% suggests the possibility that our results are not representative of the total population of psychiatrists in the United States. We were unable to obtain background information regarding the psychiatrists who refused to participate in the study. However, our participants did match the 1996 National Survey of Psychiatric Practice[4] in terms of the proportion of men, mean age, and the percentage of patients in managed care. Relative to the 1996 national sample, the psychiatrists included in our study worked more in solo practice settings (56% versus 40%) and were more likely to be board certified (89% versus 79%). The implication of these relatively small differences on the generalizability of the results is unknown.

A second limitation of this study is that the findings for diagnosis judgments are based on likelihood ratings of major depression, which were converted into dichotomous diagnosis decisions. Although this was necessary for effective data analysis, the likelihood rating cutoff used for the dichotomization may not be exactly the same for every psychiatrist. Third, the use of so-called "paper cases" might raise some concerns regarding the external validity of the findings. However, there is evidence that clinical vignettes are a valid method to assess physicians' quality of care.[23,24] In addition, the compromise in realism allowed experimental control over patient characteristics. Without such control, the effect of physician characteristics would have been difficult, if not impossible, to examine. Fourth, we did not measure for the potential confounding influence of respondent effort. Finally, we chose to restrict the hypothetical patients to female gender in the interest of an efficient experimental design and because we did not expect that patient or physician gender would be associated with decision outcomes. Future work is needed to understand how patient gender might affect psychiatrists' behavior.

Despite the concerns about the encroachment of managed care in psychiatry, this study shows that psychiatrists who participate to a greater extent in managed care, prescribe more frequently, and are more dissatisfied with their work may be those who provide a higher quality of care for the two decision outcomes studied. Factors affecting quality of psychiatric care need to be studied at several levels: physician, patient, and clinical setting. This research methodology allowed us to control patient characteristics in order to study psychiatrists' characteristics. Future research can build on our findings by studying how physician characteristics are associated with specific decision-making strategies that determine practice patterns such as diagnostic and prescribing tendencies. An understanding of how physician characteristics are associated with treatment decisions is critical in developing continuing education and other initiatives to improve the quality of patient care.

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