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Diagnosis and Treatment of Depression in the Elderly Medicare Population: Predictors, Disparities, and Trends

Stephen Crystal, PhD, **Usha Sambamoorthi, PhD**, **James T. Walkup, PhD**, and **Ayşe Akincigil, MA**
Institute for Health, Health Care Policy, and Aging Research, Rutgers University, New Brunswick, New Jersey

Abstract

Objectives—To develop nationally representative estimates of rates of diagnosis of depression; to determine rates and type of treatment received by those diagnosed with depression; and to ascertain socioeconomic differences and trends in treatment rates of depression, including the effect of supplemental insurance coverage, for elderly Medicare fee-for-service beneficiaries.

Design—Analysis of merged interview and Medicare claims data for multiple years from merged Medicare claims and interview data from the Medicare Current Beneficiary Survey (MCBS), a nationally representative survey of Medicare participants.

Setting—Community dwellers.

Participants—Twenty thousand nine hundred sixty-six community-dwelling respondents aged 65 and older in the MCBS cost and use files for 1992 through 1998.

Measurements—Diagnoses recorded in Medicare claims were used to identify individuals who received a diagnosis of depression from a healthcare provider; pharmacy and claims data were used to identify receipt of antidepressants and psychotherapy by those diagnosed.

Results—The rate of depression diagnosis more than doubled, reaching 5.8% in 1998. Overall, about two-thirds of those diagnosed received treatment in each year; but those aged 75 and older, those of “Hispanic or other” ethnicity, and those without additional coverage to supplement Medicare were significantly less likely to receive treatment, controlling for other characteristics. If treated, members of these disadvantaged subgroups were less likely to receive psychotherapy.

Conclusion—Although depression has been thought until recent years to be underrecognized in the elderly, rates of diagnosis increased dramatically in the 1990s, with concomitant increases in treatment. Nevertheless, significant disparities by age, ethnicity, and supplemental insurance coverage persist in treatment of those diagnosed. Because depression is a major source of potentially treatable morbidity in older people, increased efforts are needed to ensure access to appropriate treatment across all subgroups of older people and to remove economic barriers to treatment.

Keywords

depression; elderly; antidepressant; psychotherapy; utilization

Because of its high prevalence and its substantial effect, depression is a major contributor to the burden of illness in the older population. Its effect on function, quality of life, and use of

Address correspondence to Stephen Crystal, PhD, Institute for Health, Health Care Policy, and Aging Research, Rutgers University, 30 College Avenue, New Brunswick, NJ 08901. E-mail: scrystal@rci.rutgers.edu.

medical services is severe. The presence of depression is associated with increased healthcare costs,[1] worse outcomes after acute medical events such as hip fracture[2,3] and stroke,[4,5] decline in physical function,[6,7] and poorer survival of elderly individuals.[8] Although many efforts have been made to promote the recognition of depression and its optimal care in the elderly,[9] current nationally representative data on patterns of identification and treatment are scarce, and rapid change in healthcare systems and treatment patterns has made many earlier analyses obsolete.

Many prior studies have called attention to underdiagnosis of depression among the elderly.[9–12] Diagnosis of depression in this population can be difficult,[13–16] and patients who seek help are likely to go to their regular primary care physician rather than a mental health specialist.[17–19] General practice physicians,[20,21] who often see mental health referral as unnecessary[22,23] and report a high level of confidence in their ability to manage antidepressant therapy for depressed elderly persons, prescribe the majority of psychotropics for the elderly.[24]

Even when diagnosed, older individuals often do not receive appropriate treatment.[9,25,26] Despite the availability of a basic level of health coverage through Medicare, older persons face particular barriers to care that can create added risk of nontreatment or undertreatment.[9] They may be particularly disinclined to view their distress as a medical problem. If they rely on Medicare alone for health coverage, cost barriers may be significant, because Medicare does not cover most prescription drug use and imposes high copayments for mental health specialty services such as psychotherapy (50%, vs 20% for other Part B services). For disabled Medicare beneficiaries with a different psychiatric condition (schizophrenia), a comparison of Medicare-only to dually eligible Medicare-Medicaid beneficiaries using Medicare Current Beneficiary Survey (MCBS) data found that those with Medicare only received less-appropriate patterns of treatment, suggesting that these patients experienced more barriers to care.[27]

Medical comorbidities may motivate undertreatment in the elderly because of physician concerns about side effects of antidepressants. Such concerns may have declined because of the availability of newer medications, such as selective serotonin-reuptake inhibitors (SSRIs), which have lower side-effect profiles. Almost 80% of Maryland family physicians surveyed in 1997 named an SSRI as their first-line medication for treating depression in the elderly,[24] but data from 1993 to 1994, 5 to 6 years after the introduction of fluoxetine, showed that generalists were still substantially underusing SSRIs.[28]

The two major recognized treatment modalities for depression are antidepressants and psychotherapy. A 1991 National Institutes of Health consensus panel supported the efficacy of psychotherapy for late-life depression, and a 1997 update report found that newer evidence continued to support these findings, with new reports of the utility of a variety of approaches, alone or in combination with drug treatment.[9] Antidepressant therapy is the mainstay of medical treatment for depression and has been shown to be safe and efficacious in the medically ill[29–34] and the elderly.[35,36] Rates of efficacy are similar across classes of antidepressants (e.g., tricyclic antidepressants versus SSRIs), with 60% to 80% of patients responding to treatment.[9] The elderly tend to tolerate SSRIs better than tricyclics, and dropout rates in clinical trials of SSRIs have been shown to be one-third to one-half those of patients treated with tricyclic antidepressants.[9]

In the elderly, there has been particularly inadequate attention to understanding the factors that predict use of available treatments. Especially scarce are large, nationally representative samples of the elderly. Findings on treatment of psychiatric disorders in other populations cannot be assumed to generalize to the elderly and disabled population, whose mental healthcare needs are particularly likely to be complicated by physical comorbidities and

functional limitations. As previously reported,[37] factors affecting access to care include predisposing, enabling, and need (illness) variables. If access is equitable, one would anticipate finding that need factors principally predict treatment, whereas predisposing and, particularly, enabling factors would play minimal roles. As applied here, predisposing factors for depression treatment include age, race, and education; enabling factors include income, supplemental insurance coverage, and marital status; and need factors include such characteristics as health status, functional status, and severity. Given Medicare's limitations on pharmaceutical and mental health coverage, it is particularly important to determine the effect of supplemental coverage or lack thereof.

Thus, there is a need for better current information on trends in diagnosis and treatment of depression in older persons and on the extent of socioeconomic disparities in depression treatment for this population. Two questions, especially, are important. To what extent has identification and treatment of depression increased in the elderly in recent years? To what extent do socioeconomic factors such as the presence of supplementary insurance affect treatment?

Data and Methods

Data

To investigate treatment rates for diagnosed depression in the Medicare population, data were used from the 1992 through 1998 MCBS cost and use files. MCBS is a continuous, multipurpose study of Medicare participants, conducted by the Centers for Medicaid and Medicare Services (CMS) through a contract with Westat. The MCBS sample is drawn from CMS's national Medicare enrollment file and, with use of CMS-provided weights, is statistically representative of the national Medicare population.

The MCBS study links interview, Medicare claims, and detailed self-reported utilization data (regardless of payer), including filled prescriptions. Respondents are interviewed at 4-month intervals, producing three rounds of data per year. Respondents provide information on filled prescriptions during in-depth interviews at 4-month intervals, during which respondents are asked to bring and review pill bottles and other medication containers. Medicare claims provide detailed information, including diagnostic codes, for services from medical providers.

MCBS has a complex sample design in which each year's sample includes individuals continuing in the study from prior years and individuals added to the survey. In 1993, for example, the sample consisted of 10,936 continuing subjects and 1,927 supplemental subjects. Weights are provided to generalize to the total population enrolled in Medicare for all of a given year. The MCBS cost and use data include person-level interview-collected data (including demographics), event-level data representing nine types of services regardless of payer (dental, facility stays, institutional utilization, inpatient hospital stays, outpatient hospital care, physician/supplier services, hospice care, home health care, and prescription drugs), and Medicare claims data. The claims data consist of seven files: inpatient hospital, skilled nursing facility, hospice, home health agency, outpatient hospital, physician-supplier, and durable medical equipment.

Each calendar year represents a separate set of MCBS files. For the present study, 7 years of MCBS data were merged. A person-year approach was used, looking separately at each year of experience for each individual and exploring whether an individual with a depression diagnosis in a given calendar year received treatment in that calendar year. In this approach, a given individual could contribute up to four observations (person-years) if he or she had been in the sample for 4 years and received depression diagnoses in all 4 years, as each year's sample, appropriately weighted, is statistically representative of the population for that year. This

method permits analysis of time trends over the 4 years. The sample consisted of 51,058 person-years representing 20,966 persons.

MCBS, as a large and nationally representative sample of the Medicare population with detailed drug and diagnostic data, has many advantages for studying treatment of depression, but it did not include structured, independent diagnostic assessments. Thus, the denominator for treatment rates does not include individuals who had symptoms and signs of depression but were not recognized as depressed by healthcare providers. These treatment rates for diagnosed depression therefore do not capture the additional nontreatment that results from failure to diagnose the condition in the first place. Because the focus is the treatment of depression, rather than the other indications approved by the Food and Drug Administration and off-label uses of antidepressant medications[38,39] the sample was restricted to elderly who received a diagnosis of depression from one of their healthcare providers during a healthcare encounter. Nevertheless, as will be seen in the results reported below, even when depression is diagnosed, there is considerable variation in receipt of treatment, which is the main focus of the present study.

Because the detailed prescription drug data derive from personal interviews and were collected only for sample persons living in the community, and because treatment of institutionalized individuals in any event involves a somewhat different set of issues, the analyses were restricted to community residents. To standardize the period during which diagnoses and treatment could be observed, analyses were further restricted to individuals participating in Medicare and in the MCBS study for the full calendar year. Because detailed claims data with diagnoses were not available for individuals enrolled in Medicare risk health maintenance organizations (HMOs), these individuals (constituting 13% of beneficiaries) were excluded from the analysis.

Measures

Diagnosed Depression

Primary and secondary diagnostic codes included in Medicare claims were used to identify beneficiaries who received a diagnosis of depression from one of their providers during a healthcare encounter. The claims provide up to 10 primary and secondary diagnostic codes conforming to the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM).

Depression was classified into three categories: no depression, major depressive disorder, and other depression. Major depressive disorder included the following ICD-9-CM codes: 296.2—major depressive disorder, single episode, and 296.3—major depressive disorder, recurrent episode. Other depression included 300.4—neurotic depression; 309.0—brief depressive reaction; 309.1—prolonged depressive reaction; 298.0—depressive type psychosis (a relatively rare diagnosis in this data set); and 311—depressive disorder, not elsewhere classified. The “other depression” group predominantly consisted of individuals diagnosed with “depressive disorder, not elsewhere classified” or “neurotic depression.” Thus, on average, clinicians probably viewed cases in the “other depression” category as less severe than those classified as “major depressive disorder.” Detailed subtypes of depression may not agree with those that would be assigned based on structured diagnostic interviews, and some individuals receiving ICD-9 diagnoses of other depression may not meet *Diagnostic and Statistical Manual of Mental Disorders, Third Edition* criteria for depression or dysthymia,[40] but diagnoses of depression recorded on claims represent distress significant enough to have come to the attention of a healthcare professional.

Antidepressants

Prescribed medications were classified according to the 1997 *Physicians' Desk Reference* and the 1997 edition of *Current Clinical Strategies, Handbook of Psychiatric Drugs*. Drugs included in the class of antidepressants were amitriptyline, amoxapine, bupropion, clomipramine, desipramine, doxepin, imipramine, isocarboxazid, maprotiline, nefazodone, nortriptyline, phenelzine, protriptyline, tranylcypromine, trazodone, trimipramine, and venlafaxine, as well as the SSRIs, which include fluoxetine, fluvoxamine, paroxetine, and sertraline. Indicators for each respondent were created representing whether the respondent had any use of antidepressants during the calendar year in which a diagnosis of depression took place.

Psychotherapy

Use of psychotherapy was determined through procedure codes in Medicare claims for professional services, using Current Procedure Terminology-4 (CPT-4) and Health Care Financing Administration Common Procedure System codes. Psychotherapy included codes in the range 90841 to 90857 and in the range H5010 to H5025. An indicator variable for psychotherapy use during the calendar year in which a diagnosis took place was created and merged into the person-level file.

Income, Ethnicity

The income variable in the MCBS is measured for the respondent, or the respondent and spouse if married for the calendar year. It includes multiple sources of income, including employment, pensions, savings, rental property, annuities, investments, business activities, and public assistance. For married respondents, it is necessary to take into account the fact that the income figure is for two individuals; per-capita income was calculated by dividing married respondents' income by 2. The analysis included a measure of income to needs, with income measured as a percentage of the poverty level. Elderly with incomes lower than 200% of federal poverty guidelines were defined as “poor.” Ethnicity was classified as white non-Hispanic, African American, and a remaining “Hispanic or other” category, which included predominantly Hispanic Americans along with a smaller number of individuals of other ethnic backgrounds, such as Asian Americans.

Health Insurance Coverage

Health insurance coverage is divided into two categories: Medicare with supplemental coverage and those with only the traditional fee-for-service Medicare coverage. Supplemental coverage includes any employment-sponsored coverage, self-purchased coverage, private HMO coverage, and dually covered individuals receiving both Medicaid and Medicare.

Health Status, Functional Impairment, Chronic Medical Conditions

The MCBS includes detailed information about the respondent's health status and functioning. Self-reported health status of respondents was categorized as excellent, very good, good, fair, or poor, with poor as the reference group in the multivariate models. Functional impairment was measured using information on limitations in activities of daily living (ADLs) and instrumental activities of daily living (IADLs). The ADL scale included difficulty in bathing or showering, dressing, eating, getting in and out of chairs, walking, and using the toilet. IADLs included any difficulty in using the telephone, performing light housework (e.g., washing dishes, straightening up, or light cleaning) or heavy housework (such as scrubbing floors or washing windows), preparing meals, shopping for personal items (e.g., toiletries or medicines), and managing money (e.g., keeping track of expenses or paying bills). Depression has been shown to be independently associated with substantial increased morbidity and mortality in

older persons with hypertension, heart disease, or diabetes mellitus,[41–44] so these factors were also used as covariates, as was reported history of dementia.

Statistical Methods

Bivariate group differences in rates of depression diagnosis, treatment, and type of treatment were tested using chi-square analysis. Logistic regressions were then performed to determine the effect of each of the covariates on the probability of being diagnosed with depression and on the probability of receiving antidepressants or psychotherapy, for those who received a depression diagnosis. For those who received any treatment, multinomial logistic regressions were used to predict the effect of each of the covariates on the probability of receiving a specific type of treatment (antidepressant only, psychotherapy only, or both).

The sample design of the MCBS is a stratified area probability design with three stages of selection: (1) selection of 107 primary sampling units (PSUs), which are metropolitan statistical areas and clusters of nonmetropolitan counties; (2) selection of ZIP code clusters within the sample PSUs; and (3) selection of Medicare beneficiaries within the sample ZIP code clusters. When pooling multiple years of the data for the models described above, another level of clustering was incorporated into the model to account for repeated observations on an individual (because the person-year observations are not independent but are clustered within individuals).[45] Thus, the pooled MCBS data may have up to three levels of nesting: longitudinal measures nested within patients, patients nested within ZIP code clusters, and ZIP code clusters nested within PSUs. SUDAAN software was used to analyze the data with longitudinal measures nested within patients and appropriately handle the weights and clustering within this pooled MCBS data set (Research Triangle Institute, Research Triangle Park, NC). SUDAAN uses robust variance methods (which are invariant to misspecifications in correlation structure) as previously reported[45,46–50] for all hypothesis testing and variance estimation. The Binder algorithm is used by SUDAAN.[49] Application to clustered (and weighted) observations produces valid results no matter how many stages of nesting are involved, provided the nesting structure has been specified correctly in the model and the primary clusters are independent.[45]

Results

Diagnosis of Depression

Between 1992 and 1998, the rate at which healthcare providers diagnosed elderly persons with depression increased dramatically. Table 1 shows the proportion of respondents who received a diagnosis of depression during each calendar year and the rate of depression diagnosis across subgroups of respondents. The proportion increased from 2.8% in 1992 to 5.8% in 1998, a highly significant 107% increase in the rate of diagnosis.

Table 1 also presents rates of depression diagnosis in subgroups of the elderly population. Significant bivariate differences were seen by sex, age, marital status, income, supplemental insurance coverage, health status, functional status, and presence of heart disease, hypertension, and dementia. These differences are presented as context for the analysis of treatment patterns and cannot be interpreted as reflecting differences in recognition rates because they also reflect differences in underlying rates of depression. Nevertheless, it is of interest that a much higher proportion of those with supplemental insurance coverage than of beneficiaries with Medicare only were diagnosed with depression (4.4% vs 2.3%) and that, controlling for other characteristics, presence of supplemental coverage almost doubled the odds of depression diagnosis. Although it is possible that individuals in worse mental health disproportionately sought out and received supplemental insurance, this difference may also

reflect a greater likelihood of identifying depression in elderly individuals whose access to health care is improved by the presence of supplemental insurance.

Odds ratios (ORs) from a logistic regression on diagnosis of depression are presented in columns 4 and 5 of Table 1. As with the bivariate analysis, the logistic regression indicates significant differences in the rate of depression diagnosis by sex, health status, functional status, insurance coverage, history of diabetes mellitus or dementia, and year of MCBS, with a highly significant time trend. The odds of depression diagnosis for a beneficiary in 1998 were 2.3 times those in 1992, controlling for other characteristics. Additional insurance to supplement Medicare was associated with a much higher likelihood of depression diagnosis (OR = 1.85, 95% confidence interval (CI) = 1.41–2.42), even after other health and socioeconomic characteristics were controlled for.

Because the aim was to study identification and treatment of depression specifically rather than use of antidepressant drugs in general, analyses focused on treatment of those diagnosed with the condition. Nevertheless, it should be noted that, in addition to those individuals who are diagnosed with depression and treated with antidepressants, many additional elderly individuals receive antidepressants without having received a diagnosis of depression, particularly from primary care physicians.[51] There have been few studies that shed much light on the clinical intent underlying this high rate of use without a diagnosis of depression, but it probably represents a heterogeneous mixture of treatment aimed at a range of physical conditions such as chronic pain, treatment aimed at other psychiatric problems such as anxiety,[52] and treatment aimed at depressed mood in which the treating clinician did not wish to label the patient as depressed for a variety of reasons, including avoidance of stigma and reimbursement considerations.[51] Use of antidepressants without a depression diagnosis also increased in the study, although at a somewhat slower rate than use with such a diagnosis. Because of the heterogeneous nature of these situations and the widespread use of antidepressants for conditions other than depression, it is difficult to determine how much of this treatment could also be considered “stealth treatment” of depression. Use of antidepressants in the entire sample (including those who were not diagnosed with depression) increased from 7.3% (n = 536) in 1992 to 12.5% (n = 906) in 1998, a 71% increase. During the same period, the ratio of beneficiaries diagnosed with depression to those who used antidepressant medications was 39% in 1992, 43.4% in 1995, and 47% in 1998.

Predictors of Treatment

For each person-year, it was determined whether, among community residents who received a depression diagnosis at any time during the calendar year, antidepressants or psychotherapy were received at any point during that year. These analyses can be viewed as upper-bound estimates of treatment, because individual were classified as treated if they received as much as a single antidepressant prescription or a single psychotherapy visit during the calendar year of diagnosis. These results appear in Table 2. Notwithstanding the low threshold, results indicate fairly high rates of nontreatment of individuals who had been assigned a diagnosis of depression by healthcare providers. Overall, 67.7% received treatment and 32.3% did not.

In bivariate comparisons, the proportion receiving no treatment was significantly higher for Hispanic/other race ethnicity, the oldest old, those who were widowed, those with low income, and those with no supplemental insurance. Half (50.8%) of those without supplemental insurance did not receive treatment, versus about a third (31.5%) of those with supplemental coverage. In addition, those without prescription drug coverage were significantly less likely to receive any treatment; 37.8% received no treatment, versus 29.8% of those with prescription drug coverage.

The overall rate of treatment conditional on diagnosis of depression changed little over the 7-year period, hovering around the two-thirds mark without a consistent or significant trend. Those diagnosed with major depressive disorder were more likely to receive treatment than those diagnosed with other depressive disorders, although 16.7% of those diagnosed with major depressive disorders still received no treatment. Although it has been hypothesized that some physicians would be more cautious in treating depression in those in frail physical health due to concerns about side effects, results indicate that poorer self-reported health status was associated with a higher probability of treatment.

Multivariate analyses of treatment were also conducted among those diagnosed with depression. These results are shown in the right-hand columns of Table 2. Although African Americans were as likely as whites to receive any treatment, other racial/ethnic minorities were less likely to receive treatment (OR = 0.54, 95% CI = 0.32–0.93). Treatment odds declined with age: those aged 75 to 79 and those aged 80 and older were much less likely to receive any treatment than those aged 65 to 69. In the multivariate analysis, the education and income effects were no longer significant, although they were in the expected direction, but supplementary insurance remained strongly associated with treatment (OR = 2.03, 95% CI = 1.22–3.38). In addition, the separate variable for prescription drug coverage was in the expected positive direction, although it fell short of significance (OR = 1.21, 95% CI.94–1.55).

Those with hypertension and those with major depressive disorders were more likely to receive treatment, whereas those with heart disease were less likely to be treated. As in the bivariate analysis, there was no significant time trend in the rate of treatment of those diagnosed.

Type of Treatment

Finally, analyses examined the type of treatment received by those diagnosed and receiving treatment. Bivariate results are presented in the left-hand columns of Table 3. Overall, 60.2% of those treated received antidepressants only, 14.4% received psychotherapy only, and 25.5% received both. (These are proportions among those receiving any treatment.) In bivariate comparisons, type of treatment was associated with age, socioeconomic status, health status, functional status, chronic conditions, and type of depression. Those with a college education were much more likely to receive psychotherapy and less likely to receive antidepressants only (31.9% vs 63.9% for those without a college education). Respondents between the ages of 65 and 74 received psychotherapy in more than one-third of cases, versus fewer than one-quarter of cases of those aged 75 and older. Overall, only 17% of respondents diagnosed with depression received both antidepressants and psychotherapy during the course of a year, although a few studies have suggested that such a regimen may offer the best prospects for improvement because antidepressants may ameliorate the acute effect of depression and increase the patient's responsiveness, motivation, and accessibility to psychotherapy.[12,53,54] Even among those diagnosed with major depressive disorder, fewer than half received both treatment modalities.

Multinomial logistic regression was employed to examine factors associated with type of treatment in a multivariate framework. Here, the reference group was receipt of both antidepressants and psychotherapy. The oldest old (80) were more likely to be treated with antidepressants alone than those aged 65 to 69 (OR = 2.00, 95% CI = 1.26–3.20). African Americans were more likely than whites to be treated with psychotherapy alone. Married patients were more likely to receive combined treatment. Type of treatment was also associated with type of depression and with some comorbid conditions. As expected, patients with major depression were more likely, and those with dementia less likely, to receive combined treatment.

Discussion

Results of this study demonstrate a substantial recent increase in diagnosis and, consequently, in treatment of depression in the elderly, with treatment increasingly taking the form of antidepressant treatment without psychotherapy. Nevertheless, members of some subgroups were less likely to receive any treatment if diagnosed, including those aged 75 and older, those of "Hispanic or other" ethnicity, and those relying on Medicare alone for health coverage. If treated, members of these disadvantaged groups were also generally less likely to receive psychotherapy in addition to, or in place of, antidepressant medications.

Despite a sharp increase in the proportion of elderly diagnosed with depression, which might suggest increased diagnosis of patients with less-severe symptoms, the proportion of diagnosed individuals who received treatment remained fairly constant during the period of the study, at about two-thirds of those diagnosed. Treatment of those diagnosed kept up with the increase in diagnosis, and, indeed, the perceived availability of better treatments may be driving the increase in diagnosis as much as the converse. Thus, consistent with and extending results of earlier studies that did not focus specifically on the elderly population,[55] the proportion of older persons treated for depression increased rapidly between 1992 and 1998. In addition to the increased proportion of elderly who received a diagnosis of depression and treatment with antidepressants or psychotherapy, there was a continuing increase in the proportion of elderly who received antidepressants without a diagnosis of depression. Overall, the rate of depression diagnosis increased by 107%, and the rate of antidepressant treatment (of those with and without depression diagnoses) increased by 71%.

Results suggest that the likelihood and the type of treatment for diagnosed depression depend to a significant extent on socioeconomic factors. Need factors were important, because diagnosis with major depression was, as expected, associated with a higher probability of receiving treatment and, if treated, receiving both antidepressants and psychotherapy. However, even in the major depression group, the proportion receiving neither treatment, at 16.7%, is reason for concern, although comparable or higher rates of nontreatment have been demonstrated for many nonpsychiatric illnesses. It should be noted that results provide upper-bound estimates of the rate of treatment, because a single antidepressant prescription or a single psychotherapy visit would classify an individual as receiving treatment. Presumably rates of optimal care are lower.

Controlling for type of depression diagnosis and physical comorbidities, substantial socioeconomic differences were found in the probability of treatment of those diagnosed with depression, as well as the type of treatment. Subgroups found to be disadvantaged in terms of receiving any type of treatment included Hispanics and those of "other" ethnicity, those aged 75 and older, and those without supplemental health insurance. These results suggest that elderly individuals relying on Medicare alone may experience financial barriers to care for depression despite the layer of basic healthcare coverage that Medicare provides. Lower rates of treatment in some subgroups are a concern, persisting despite the rapid diffusion of SSRIs during this period.

Concurrent with the diffusion of newer treatments perceived as safer and more acceptable, there has been a striking increase in diagnosis of depression in the elderly. These results suggest that depression in this age group is no longer as underdiagnosed a condition as it has often been considered in the past and that physicians, including primary care physicians, are increasingly willing to diagnose and treat it, typically with antidepressant drugs. However, with the growth in depression diagnosis and treatment, there is an increasing need for more attention to issues of quality of care and equity of access. In particular, the results suggest the need to carefully

examine the effect of Medicare coverage limitations and cost-sharing requirements on access to care for this condition.

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Table 1

Diagnosed Depression in Elderly Medicare Beneficiaries: Medicare Current Beneficiary Survey 1992–1998

Characteristic	Percent of Sample	Percent Diagnosed with Depression	Logistic Regression on Diagnosed Depression	
			Odds Ratio	95% CI
All	100.0	4.2	—	—
Year of diagnosis				
1992	14.5	2.8†	—	—
1993	15.1	3.6	1.36*	(1.15–1.59)
1994	14.6	4.0	1.48*	(1.24–1.76)
1995	14.3	3.9	1.46*	(1.19–1.79)
1996	14.2	4.7	1.82*	(1.47–2.24)
1997	13.8	4.9	1.87*	(1.55–2.25)
1998	13.6	5.8	2.30*	(1.91–2.77)
Sex				
Female	58.8	5.3†	1.82*	(1.56–2.12)
Male	41.3	2.7	—	—
Race/ethnicity				
White	88.8	4.3	—	—
African American	7.9	3.6	0.72	(0.51–1.01)
Hispanic/Other	3.3	3.6	0.72	(0.48–1.08)
Age				
65–69	21.9	3.8†	—	—
70–74	29.9	4.1	0.99	(0.83–1.19)
75–79	22.9	4.3	0.95	(0.78–1.15)
80 or older	25.3	4.7	0.84	(0.68–1.03)
Marital status				
Married	55.7	3.6†	1.17	(0.79–1.74)
Widowed	33.8	5.3	1.35	(0.92–1.97)
Divorced/separated	6.7	4.8	1.41	(0.93–2.14)
Never married	3.9	3.5	—	—
Education				
No college	88.1	4.3	—	—
College	11.9	3.7	1.21	(0.97–1.52)
Poverty status				
Poor	53.3	4.6†	0.99	(0.87–1.12)
Not poor	46.7	3.8	—	—
Supplemental insurance				
No	8.0	2.3†	—	—
Yes	92.0	4.4	1.85*	(1.41–2.42)
Health status				
Excellent/very good	45.2	2.5†	0.30*	(0.25–0.36)
Good	31.5	4.1	0.48*	(0.41–0.57)
Fair	17.0	6.7	0.75*	(0.63–0.88)
Poor	6.2	10.1	—	—
ADL impairment			1.19*	(1.10–1.28)
None	72.0	3.3†	—	—
1–2	18.7	5.2	—	—
3–4	5.9	8.0	—	—
5–6	3.5	10.7	—	—
IADL impairment			1.13*	(1.06–1.20)
None	71.9	3.4†	—	—
1–2	21.9	5.6	—	—
3–4	4.6	8.1	—	—
5–6	1.7	10.6	—	—
Health conditions				
Heart disease				
Yes	39.0	5.1†	1.12	(0.99–1.27)
No	61.1	3.6	—	—
Hypertension				
Yes	55.2	4.7†	1.02	(0.89–1.16)
No	44.8	3.7	—	—
Diabetes mellitus				
Yes	16.4	4.4	0.81*	(0.69–0.96)
No	83.6	4.2	—	—
Dementia				
Yes	2.1	8.4†	1.42*	(1.11–1.81)
No	97.9	4.1	—	—

Characteristic	Percent of Sample	Percent Diagnosed with Depression	Logistic Regression on Diagnosed Depression	
			Odds Ratio	95% CI

Note: Based on Medicare current beneficiaries aged 65 and older living in the community, enrolled in Medicare for the whole year, and not enrolled in Medicare managed care organizations.

† Denotes group differences significant at .05 level based on chi-square statistics.

* Significant differences relative to the reference group ($P < .05$). The regression also includes an intercept term. All calculations are weighted and take sample design into consideration.

ADL = activity of daily living; IADL = instrumental activity of daily living; CI = confidence interval.

Table 2

Treatment of Elderly Medicare Beneficiaries Diagnosed with Depression

Characteristic	Treatment mode (%)				Logistic Regression on Any Treatment	
	None	Antidepressants Only	Psychotherapy Only	Both	Odds Ratio	95% CI
All	32.3	40.7	9.7	17.2	—	—
Year of diagnosis						
1992	34.0	37.2	12.3	16.5	—	—
1993	33.3	35.9	13.4	17.4	0.95	(0.63–1.41)
1994	34.1	38.0	10.9	17.0	0.99	(0.62–1.46)
1995	30.9	40.9	10.8	17.4	1.14	(0.77–1.69)
1996	31.3	41.2	9.2	18.3	1.10	(0.74–1.63)
1997	33.4	42.8	4.8	19.1	0.91	(0.61–1.36)
1998	30.5	45.5	8.9	15.1	1.11	(0.77–1.59)
Gender						
Female	33.1	41.2	8.9	16.8	1.08	(0.80–1.45)
Male	30.2	39.5	12.0	18.4	—	—
Race/ethnicity						
White	31.9	40.8	9.3	18.0	—	—
African American	34.4	42.9	15.3	7.5	0.96	(0.63–1.45)
Hispanic/Other	43.0	33.0	9.5	14.5	0.54*	(0.32–0.93)
Age†						
65–69	24.4	41.5	12.0	22.1	—	—
70–74	29.8	38.1	12.4	19.8	0.76	(0.54–1.09)
75–79	31.8	41.3	8.3	18.6	0.66*	(0.46–0.97)
80 or older	40.9	42.4	6.6	10.2	0.44*	(0.32–0.60)
Marital status†						
Married	28.2	39.5	10.0	22.3	0.59	(0.28–1.24)
Widowed	37.4	42.9	9.3	10.5	0.45*	(0.22–0.93)
Divorced/Separated	34.7	37.7	10.2	17.4	0.41*	(0.18–0.95)
Never married	21.6	37.9	10.1	30.5	—	—
Education						
No College	33.0	42.8	8.0	16.2	—	—
College	25.8	23.7	24.2	26.4	1.24	(0.77–2.00)
Poverty status†						
Poor	35.6	41.7	7.6	15.1	0.83	(0.63–1.08)
Not-poor	27.8	39.3	12.6	20.3	—	—
Supplemental insurance†						
No	50.8	33.3	6.2	9.8	—	—
Yes	31.5	41.0	9.9	17.6	2.03*	(1.22–3.38)
Prescription drug coverage†						
Yes	29.8	41.6	9.9	18.8	1.21	(0.94–1.55)
No	37.8	38.9	9.5	13.9	—	—
Health status						
Excellent/very good	35.2	34.7	13.0	17.1	1.01	(0.70–1.44)
Good	31.8	41.2	9.2	17.9	1.23	(0.90–1.69)
Fair	30.8	45.8	9.0	14.5	1.23	(0.92–1.66)
Poor	31.1	41.7	6.3	20.9	—	—
ADL impairment					1.09*	(1.02–1.18)
None	33.3	36.0	12.1	18.7	—	—
1–2	34.1	44.6	6.0	15.4	—	—
3–4	28.9	50.3	8.6	12.2	—	—
5–6	26.0	49.4	6.1	18.5	—	—
IADL impairment					1.06	(0.96–1.16)
None	33.6	36.9	11.5	18.1	—	—

Characteristic	Treatment mode (%)				Logistic Regression on Any Treatment	
	None	Antidepressants Only	Psychotherapy Only	Both	Odds Ratio	95% CI
1–2	30.7	44.7	7.7	16.9	—	—
3–4	31.8	49.0	6.9	12.3	—	—
5–6	28.7	49.7	6.0	15.6	—	—
Health conditions						
Heart disease						
Yes	33.3	41.0	8.2	17.4	0.76*	(0.60–0.97)
No	31.4	40.4	11.1	17.1	—	—
Hypertension						
Yes	30.9	42.9	8.0	18.3	1.27*	(1.01–1.59)
No	34.6	37.3	12.5	15.7	—	—
Diabetes mellitus						
Yes	31.8	46.8	7.3	14.1	0.97	(0.69–1.37)
No	32.4	39.5	10.2	17.9	—	—
Dementia						
Yes	26.5	51.9	11.8	9.8	1.38	(0.92–2.07)
No	32.6	40.2	9.6	17.6	—	—
Sector†						
Mental health	9.1	17.1	25.7	48.1	Not included	
Other	44.0	52.6	1.7	1.8	Not included	
Severity of depression†						
Major depression	16.7	29.1	15.6	38.6	3.15*	(2.38–4.18)
Other depression	38.1	45.0	7.5	9.3	—	—

Note: Based on Medicare current beneficiaries aged 65 and older living in the community, enrolled in Medicare for the whole year, not enrolled in Medicare managed care organizations, and diagnosed with depression.

† Significant group differences in treatment versus no treatment based on chi-square statistics. Odds ratios and 95% confidence intervals (CIs) are from a logistic regression on depression treatment.

* Significant differences relative to the reference group ($P < .05$). The regression also includes an intercept term. All calculations are weighted and take sample design into consideration.

ADL = activity of daily living; IADL = instrumental activity of daily living.

Table 3

Type of Treatment of Elderly Medicare Beneficiaries Diagnosed with Depression, of Those Receiving Treatment

Characteristic	Type of Treatment Weighted %			Multinomial Logistic Regression on Type of Treatment			
				Antidepressant Only vs Both		Psychotherapy vs Both	
	Antidepressant Only	Psychotherapy Only	Both	Odds Ratio (95% CI)			
All	60.2	14.4	25.5	—	—	—	—
Year of diagnosis							
1992	56.3	18.7	25.0	—	—	—	—
1993	53.9	20.0	26.1	0.91	(0.52–1.57)	0.94	(0.51–1.74)
1994	57.7	16.5	25.8	0.88	(0.52–1.49)	0.88	(0.48–1.60)
1995	59.2	15.6	25.2	0.86	(0.42–1.77)	0.69	(0.33–1.47)
1996	60.0	13.3	26.7	0.92	(0.50–1.71)	0.80	(0.37–1.74)
1997	64.1	7.2	28.6	0.97	(0.51–1.86)	0.37*	(0.16–0.83)
1998	65.5	12.9	21.7	1.23	(0.66–2.31)	0.94	(0.47–1.88)
Gender							
Women	61.5	13.3	25.2	0.78	(0.48–1.27)	0.69	(0.42–1.15)
Men	56.5	17.1	26.4	—	—	—	—
Race/ethnicity							
White	59.9	13.7	26.5	—	—	—	—
African American	65.3	23.3	11.5	2.32	(0.90–5.99)	5.41*	(2.20–13.3)
Hispanic/other	57.9	16.6	25.5	1.44	(0.48–4.36)	1.25	(0.31–5.07)
Age†							
65–69	54.9	15.9	29.2	—	—	—	—
70–74	54.2	17.6	28.2	1.08	(0.64–1.83)	0.85	(0.51–1.42)
75–79	60.5	12.2	27.2	1.21	(0.70–2.09)	0.72	(0.42–1.26)
80 or older	71.7	11.1	17.2	2.00*	(1.26–3.20)	1.31	(0.79–2.17)
Marital status†							
Married	55.0	14.0	31.1	0.49*	(0.31–0.76)	0.51*	(0.30–0.87)
Other	65.4	14.8	19.8	—	—	—	—
Education†							
No college	63.9	12.0	24.1	—	—	—	—
College	31.9	32.6	35.5	0.53	(0.25–1.12)	1.95	(1.00–3.80)
Poverty status†							
Poor	64.8	11.8	23.4	0.89	(0.61–1.30)	0.98	(0.66–1.47)
Not-poor	54.5	17.5	28.1	—	—	—	—
Supplemental insurance							
No	67.7	12.6	19.8	—	—	—	—
Yes	59.9	14.4	25.7	0.98	(0.44–2.18)	1.33	(0.37–4.82)
Prescription drug coverage							
Yes	59.2	14.0	26.7	0.82	(0.52–1.29)	0.65	(0.42–1.01)
No	62.4	15.2	22.4	—	—	—	—
Health status							
Excellent/very good	53.5	20.0	26.4	1.60	(0.95–2.70)	1.85	(0.91–3.77)
Good	60.4	13.4	26.2	1.53	(0.87–2.68)	1.62	(0.84–3.15)
Fair	66.1	13.0	20.9	2.16*	(1.22–3.80)	2.03*	(1.09–3.79)
Poor	60.5	9.1	30.4	—	—	—	—
ADL impairment†				1.13	(0.89–1.43)	1.02	(0.80–1.30)
None	54.0	18.1	28.0	—	—	—	—
1–2	67.6	9.1	23.3	—	—	—	—
3–4	70.8	12.1	17.2	—	—	—	—
5–6	66.8	8.2	25.0	—	—	—	—
IADL impairment†				1.00	(0.80–1.25)	0.86	(0.66–1.12)
None	55.5	17.3	27.3	—	—	—	—

Characteristic	Type of Treatment Weighted %			Multinomial Logistic Regression on Type of Treatment			
				Antidepressant Only vs Both		Psychotherapy vs Both	
	Antidepressant Only	Psychotherapy Only	Both	Odds Ratio (95% CI)			
1–2	64.5	11.1	24.4	—	—	—	—
3–4	71.9	10.1	18.0	—	—	—	—
5–6	69.7	8.5	21.8	—	—	—	—
Health conditions							
Heart disease							
Yes	61.6	12.4	26.1	1.11	(0.73–1.68)	1.02	(0.67–1.53)
No	58.9	16.2	25.0	—	—	—	—
Hypertension†							
Yes	62.1	11.6	26.4	0.88	(0.56–1.36)	0.61*	(0.41–0.91)
No	57.0	19.0	23.9	—	—	—	—
Diabetes mellitus							
Yes	68.6	10.7	20.7	1.45	(0.89–2.38)	1.10	(0.61–1.98)
No	58.4	15.2	26.5	—	—	—	—
Dementia†							
Yes	70.6	16.0	13.4	2.40*	(1.07–5.37)	3.07*	(1.24–7.60)
No	59.7	14.3	26.0	—	—	—	—
Severity of depression†							
Major depression	34.9	18.8	46.3	0.14*	(0.09–0.21)	0.44*	(0.29–0.68)
Other depression	72.7	12.2	15.1	—	—	—	—

Note: Based on Medicare current beneficiaries aged 65 and older living in the community, enrolled in Medicare for the whole year, not enrolled in Medicare managed care organizations, diagnosed with depression, and having received antidepressants or psychotherapy.

† Significant group differences based on chi-square statistics. Odds ratios and 95% confidence intervals are from a multinomial logistic regression on type of treatment. The reference group for type of treatment is “both.”

* Significant estimated differences relative to the reference group ($P < .05$). The regression also includes an intercept term. All calculations are weighted and take sample design into consideration.

ADL = activity of daily living; IADL = instrumental activity of daily living.