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THE ROLE OF CARDIOVASCULAR DISEASE IN THE IDENTIFICATION AND MANAGEMENT OF DEPRESSION BY PRIMARY CARE PHYSICIANS

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Abstract

OBJECTIVE—To describe the influence of cardiovascular disease (CVD) on identification and management of depression by primary care physicians.

METHOD—Three hundred and fifty-five adults with and without significant depressive symptoms who were screened in primary care offices and invited to participate, completed a baseline in-home assessment. CVD was assessed by self-report and psychological status was assessed with commonly used, validated standard questionnaires. At the index visit, doctor's ratings of depression and reports of active management were obtained on 340 of the 355 patients who completed in-home interviews.

RESULTS—Older adults who reported heart failure were more likely to be identified as depressed than were older adults who did not report heart failure (unadjusted odds ratio (OR) = 2.34, 95% confidence interval (CI) [1.13, 4.85]; Wald $\chi^2 = 5.20$, df = 1, p = 0.023). In multivariate models that controlled for potentially influential characteristics such as age, marital status, education, ethnicity, functional status, level of depression, cognitive impairment, attitudes about depression, use of medical care, and number of medications, the findings remained statistically significant. Among older adults identified as depressed, older adults with heart failure were significantly less likely to be actively managed for depression than were older adults without heart failure (unadjusted OR = 0.33, 95% CI [0.14, 0.76]; Wald $\chi^2 = 6.73$, df = 1, p = 0.009). After controlling for potentially influential covariates, these findings remained substantially unchanged.

CONCLUSIONS—CVD, in particular heart failure, may influence the identification and management of depression among older patients by primary care physicians. The findings underlie the importance of developing interventions that integrate the management of depression and CVD in primary care settings.

Keywords

Depression; treatment; diagnosis; ischemic heart disease; primary health care

INTRODUCTION

Cardiovascular disease (CVD) is a common medical comorbidity accompanying depression [1,2]. The risk of both developing and dying of CVD is significantly elevated among depressed individuals [1–5]. For individuals to receive depression treatment two decisions have to be made by the physician: does this patient have depression and would depression treatment be useful? In this investigation, we assess the relationship between physician identification of depression and the presence of CVD, and, separately, the relationship between physician report of active management of depression and specific CVD. Despite the relevance of depression to prognosis in patients with CVD, depression in the context of CVD may often be underrecognized and undertreated [6].

The reasons why depression is often underrecognized and undertreated in patients with CVD have yet to be fully elucidated. Depression typically is identified by sadness but can be diagnosed in the absence of this feature [7]. Because older adults with chronic medical conditions such as CVD may not assent to sadness and because other symptoms such as fatigue are common to depression and CVD, symptom overlap might contribute to the underrecognition of depression by primary care physicians. Alternatively, physicians and patients might believe that depression is a normal reaction to CVD. Early investigators of depression in the context of medical comorbidity judged the depression to be a psychological consequence of having an illness [8]. In addition, some physicians may be reluctant to ask their patients about depression [9] and patients may be reluctant to report the symptoms of depression. Furthermore, effective treatment of older patients with depression and comorbid CVD requires an understanding of the interplay between these two illnesses [10,11]. Physicians may be reluctant to prescribe antidepressants to patients with CVD because of potential adverse side effects or because older adults with CVD may already be taking many medications. Nevertheless, to our knowledge, no previous research has differentiated how various types of CVD interfere with depression identification and management by primary care physicians.

Our goal was to investigate the influence of various types of CVD on identification and management of depression by primary care physicians in a large primary care study. We hypothesized that primary care physicians would be least likely to identify and treat depression among older patients with types of CVD with a predominance of symptoms such as fatigue and insomnia which are also common to depression; for example, heart failure and coronary heart disease. We also hypothesized that the greater the number of cardiovascular diagnoses (i.e., the greater the burden of CVD), the less likely the patient's primary care physician would be to report that depression was identified and managed. The priority depression gets during a given medical visit is less associated with the severity of the patient's depressive symptoms than with the competing demands of practice, including the number or recency of physical comorbidity [12]. The purpose of the present study was to examine the association between both individual cardiovascular diagnoses and overall burden of CVD with the identification and management of depression among an ethnically diverse sample of older primary care patients.

METHODS

The Spectrum Survey

The Spectrum Survey is an observational study designed to describe correlates of depressive symptoms that do not meet standard criteria for Major Depression in older primary care patients. Primary care practices recruited from the community provided the venue for sampling older patients. Trained lay interviewers were instructed in screening and interviewing by the study investigators working with Battelle Memorial Institute's Center for Public Health Research and Evaluation, Baltimore, Maryland. Participants who agreed to be part of the study

were scheduled for an in-home interview which consisted of a 90 minute survey questionnaire. Of 3,459 persons aged 65 years and older, 2,560 answered the screening questionnaire. We asked 773 to participate based on their responses to the screening interview. In-home interviews were obtained for 357 people, but 2 persons broke off the interview before it was completed, leaving a sample of 355 persons. Details of the study design of the Spectrum Study are available elsewhere [13, 14]. The study protocols were approved by the Institutional Review Board of the University of Pennsylvania School of Medicine.

Physician assessment and management of depression

Physicians were asked to provide their assessment of patient's depression at the index visit. Physicians were asked to rate the patient's depression as "none, mild, moderate or severe." Physicians were also asked "which of the following have you provided for this patient on this visit or in the last six months?" They were able to choose from the following categories "provided counseling/supportive listening for depression," "tried to refer to a mental health specialist," and "prescribed psychotropic medication for depression, anxiety, or sleep." Physicians could indicate they had provided more than one kind of active management.

Measurement strategy

We used standard questions to obtain information from the respondents on age, gender, marital status, self-reported ethnicity, and education. Persons were assessed for CVD by self-report. Participants were asked if they had ever been told by a doctor that they had a heart attack, congestive heart failure, bypass surgery or angioplasty (e.g., balloon procedure), and stroke, assessed in separate questions for each condition. We also assessed for the presence of angina with the Rose Questionnaire [15]. Total cardiovascular burden was calculated by counting the number of cardiovascular conditions, and 3 or more conditions was chosen as indicative of significant CVD burden. The Medical Outcomes Study Short Form (SF-36) has been employed in studies of outcomes of patient care [13, 16–20] and appears to be reliable and valid even in frail elders [21]. The Mini-Mental State Examination (MMSE) is a short standardized mental status examination that has been widely employed for clinical and research purposes [22]. The Centers for Epidemiologic Studies Depression (CES-D) scale was developed by the Center for Epidemiologic Studies at the National Institute of Mental Health for use in studies of depression in community samples [23–25]. Participants were asked to gather the bottles of their prescription medications before the interview. The interviewer wrote down the medications and dosages directly from the bottles. We tallied the total number of medications the patient was taking excluding antidepressant or psychotropic medications. We asked patients whether they agreed or disagreed with three statements about depression and its treatment [26]. The statements were "I believe depression is a medical problem," "If my doctor told me I had depression, I could accept that," and "I would take a medicine for depression if my doctor told me to." Participants were asked "During the past 6 months, how many visits did you make to primary care or family doctors, internists, surgeons or other medical specialists? This question refers only to office visits or clinic visits."

Analytic strategy

Data analysis was performed using SPSS version 12. First, we calculated descriptive statistics for the participants in the sample. Bivariate associations between CVD and demographic variables, attitudes about depression, use of medical care, functional status, cognitive status, depressive symptoms, and number of medications were examined using χ^2 or t-tests as appropriate for categorical data or means. An estimate of association (an odds ratio) was produced between CVD and primary care physician identification of depression by the method of logistic regression, along with a corresponding standard error and a p-value (two-tailed). Our study sample included 355 participants who had completed a baseline in-home interview.

Fifteen participants were excluded because of incomplete physician assessment of patient, leaving a sample size of 340 for this analysis. We employed separate logistic regression models to assess the relationship of CVD with physician report of management of depression. All multivariable models included terms for age, gender, marital status, education, ethnicity, functional status, cognitive status, depressive symptoms, attitudes about depression, and use of medical care. In addition, in the final models we also adjusted our measures of association for the number of medications exclusive of antidepressant or psychotropic medications.

RESULTS

Study sample

The mean age of our study sample was 75.3 years with a standard deviation of 5.9 years. The age range was 65 to 92 years. One hundred and sixteen (34.2%) of the participants self-identified themselves as African-American. Seventy participants (20.5%) reported a history of myocardial infarction, 40 participants (11.8%) reported heart failure, 60 participants (17.6%) reported a history of angioplasty, 22 participants (6.5%) reported angina, and 60 participants (17.6%) reported a history of stroke. Sociodemographic characteristics, attitudes about depression, use of medical care, number of medications, functional and cognitive status, and depressive symptoms were compared among the participants with and without CVD (Table 1). As expected, respondents who reported CVD were significantly more likely to be male, have a higher use of medical care, have worse physical functioning, and have more depressive symptoms.

CVD and physician identification of depression

Older adults with heart failure were significantly more likely to be identified as depressed than were older adults without heart failure (unadjusted odds ratio (OR) = 2.34, 95% confidence interval (CI) [1.13, 4.85]; Wald $\chi^2 = 5.20$, $df = 1$, $p = 0.023$). In multivariate models that controlled for the potentially influential characteristics of age, gender, marital status, education, ethnicity, functional status, cognitive status, depressive symptoms, attitudes about depression, use of medical care, and number of medications, the association between heart failure with identification of depression remained significant (OR = 2.82, 95% CI [1.13, 7.07]; Wald $\chi^2 = 4.90$, $df = 1$, $p = 0.027$). A goodness-of-fit diagnostic and plots of the deviance residuals versus fitted values predicted by the model showed that the coefficient estimates were not influenced appreciably by any one observation. In contrast, older adults with myocardial infarction, angioplasty, angina, and stroke were no more likely to be identified as depressed than were older adults without one of these diagnoses (Table 2).

CVD and physician report of depression management

Table 3 shows the association between CVD and physician report of management of depression. Among older adults identified as depressed, older adults with heart failure were significantly less likely to be actively managed for depression than were older adults without heart failure (unadjusted OR = 0.33, 95% CI [0.14, 0.76]; Wald $\chi^2 = 6.73$, $df = 1$, $p = 0.009$). Point estimates were barely not significant after entering age, gender, marital status, education, ethnicity, functional status, cognitive status, depressive symptoms, attitudes about depression, and use of medical care into the models (adjusted OR = 0.39, 95% CI [0.15, 1.05]; Wald $\chi^2 = 3.44$, $df = 1$, $p = 0.064$). After controlling for number of medications as well as age, gender, marital status, education, ethnicity, functional status, cognitive status, depressive symptoms, attitudes about depression, and use of medical care, the association between heart failure with physician reported management for depression did not achieve statistical significance (adjusted OR = 0.47, 95% CI [0.16, 1.38]; Wald $\chi^2 = 1.89$, $df = 1$, $p = 0.170$).

Among older adults identified as depressed, older adults with stroke were also less likely to be actively managed than were older adults without stroke (unadjusted OR = 0.44, 95% CI [0.20, 0.96]; Wald $\chi^2 = 4.21$, df = 1, p = 0.04). However, in multivariate models that controlled for the potentially influential characteristics of age, gender, marital status, education, ethnicity, functional status, cognitive status, depressive symptoms, attitudes about depression, use of medical care, and number of medications, the association between stroke with treatment of depression did not remain statistically significant (adjusted OR = 0.57, 95% CI [0.22, 1.49]; Wald $\chi^2 = 1.31$, df = 1, p = 0.253).

Burden of CVD and physician identification and management of depression

Reporting of 3 or more cardiovascular conditions was associated with an increased likelihood of being identified as depressed as compared to reporting of fewer than 3 cardiovascular conditions (unadjusted OR = 2.47, 95% CI [1.01, 6.00]; Wald $\chi^2 = 3.96$, df = 1, p = 0.047). The point estimate remained substantially unchanged but the results were no longer statistically significant after adjustment for age, gender, marital status, education, ethnicity, functional status, cognitive status, depressive symptoms, attitudes about depression, use of medical care, and number of medications (adjusted OR = 1.96, 95% CI [0.70, 5.45]; Wald $\chi^2 = 1.64$, df = 1, p = 0.20). Among older adults identified as depressed, older adults with 3 or more cardiovascular conditions were less likely to be actively managed than were older adults without 3 or more cardiovascular conditions, and these results approximated but did not reach statistical significance (unadjusted OR = 0.38, 95% CI [0.14, 1.01]; Wald $\chi^2 = 3.81$, df = 1, p = 0.051).

Reasons given by physicians for not actively managing depression

Physicians were encouraged to give as many reasons as applied for not actively managing depression. Sixteen physicians gave two or more reasons while the rest of the physicians gave a single reason. The physicians gave a variety of reasons for not actively managing depression but the two most common reasons were that the depression was too mild and the patient had a temporary adjustment reaction only. There were no statistically significant differences between the reasons physicians gave for participants who reported CVD and for participants who did not report CVD.

DISCUSSION

In our primary care sample, participants who reported a diagnosis of heart failure were more likely than participants who did not report heart failure to be rated as depressed by the physician but were no more likely to have the doctor report that depression was actively managed after controlling for number of medications. Patients who reported an increased burden of CVD appeared to be more likely to be identified as depressed than patients who did not report an increased burden of CVD but were no more likely to have the doctor report that active management of depression had been provided.

Before further discussing our findings, the results must first be considered in the context of some potential study limitations. First, we obtained our results only from primary care sites in Maryland whose patients may not be representative of most primary care practices. However, these practices were not academically affiliated and are probably similar to other practices in the country. Second, there is the potential for all the sources of error associated with retrospective interview data including imperfect recall and response bias (e.g., socially desirable responding). Study data are based on self-reports including the data on CVD and are therefore subject to misclassification bias. However, if the misclassification of CVD is nondifferential with respect to the outcome, the results should not be biased. Identification of CVD is complex and each method used to ascertain the presence of CVD has limitations. The

Nurse's Health Study used WHO criteria to define MI and confirmed only 68% of self-reported myocardial infarction (MI), but most of the nonconfirmed MI cases did have cardiac disease [27]. Another study that accepted a physician diagnosis as confirmation found that 81% of self-reported MIs were confirmed by medical records [28]. Patients may not know or be able to recall their diagnoses and may misuse terms; however, medical records are often incomplete. For example, relying on medical records may miss persons who received health care in more than one health system. Third, our measure of CVD comorbidity determined by adding up the number of conditions the patient reported is a common method for dealing with comorbidity, but assumes that all conditions are weighted equally. A recent article found a simple count of chronic conditions performed at least as well as the more complex measures [29]. Fourth, selection bias is a potential limitation because, although the larger project was based on a sample of primary care patients who visited their primary care doctor while the study was underway, the data on the identification and treatment of depression consisted of all who were selected for the larger project, agreed to participate, and had complete physician assessment information. We have no evidence from our analyses that strong selection biases occurred [13, 14].

Nonetheless, despite limitations our study warrants attention because we attempted to evaluate how different types of CVD and the overall burden of CVD affect the identification and treatment of depression by primary care physicians. We found even after controlling for the level of depression, physicians were significantly more likely to identify patients with heart failure as being depressed. The difficulties inherent in identifying depression in the context of a disease such as heart failure with symptoms that mimic depression have been addressed [30]. However the clinicians in our study were more likely to identify depression in the context of heart failure, after adjustment for multiple factors including severity of depression.

Our results are not wholly consistent with our original hypotheses. We did not find that physicians were significantly more likely to identify depression among the various other forms of heart disease we examined. However, the point estimates indicated that this might be the case for forms of heart disease other than heart failure. Heart failure is often the end stage of heart disease [31]. Patients who reported other CVD conditions may have been early in the course of heart disease or might have a more mild form of the disease.

When examining the management of depression, we found that patients who reported heart failure were no more likely to have the physician report that the depression was actively managed even after adjusting for potentially influential covariates including level of depression and number of medications currently being taken. These findings may reflect physicians' evaluation of the limited information in the literature on the safety and efficacy of depression treatment in patients with heart disease. The most recent trial examining nonpharmacologic treatment of depression in patients after a myocardial infarction, Enhancing Recovery in Coronary Heart Disease Patients (ENRICHD), found no significant overall treatment effects [32]. The Sertraline for Major Depression After Acute Coronary Syndromes (SADHART) trial established the safety of sertraline in patients with acute coronary syndromes [33]. The treatment of depression in patients with CVD is further complicated by the cardiovascular effects of antidepressant treatment. Adequately controlled studies of the cardiovascular effects of many antidepressant treatments are lacking. Tricyclic antidepressants (TCAs) and selective serotonin reuptake inhibitors (SSRIs) have been the most extensively studied antidepressant treatments in patients with CVD. Both the TCAs and SSRIs have been demonstrated to be effective for the treatment of depression in patients with CVD, but TCAs have been found to be associated with a significantly higher rate of serious adverse cardiac events compared with paroxetine, an SSRI [10]. Little is known, however, specifically about the safety and efficacy of pharmacologic depression treatment in patients with heart failure.

Finally, we found that patients who reported an increased burden of CVD appeared to be less likely to be identified as depressed but not less likely to have the physician report that active management of depression had been provided. These findings are consistent with the literature that the primary care treatment of mental health problems competes with multiple physician and patient priorities including the treatment of acute and chronic physical illness. Competing demands posed by multiple medical conditions which the doctor must address in a short time may influence whether depression is discussed [12].

Physicians who had reported that depression was not actively managed (i.e., did not report any management within 6 months of interview) indicated that the depression was too mild or thought the patient was having only a temporary adjustment reaction. It is important that both physicians and patients realize that depression is not a standard part of CVD. Although early investigators indicated that depression might be a psychological consequence of having a physical illness and therefore have a less severe course [8], more recent studies have documented the negative prognosis of depression in the context of CVD [2–5].

Our findings underscore the importance of the development of interventions which aid primary care physicians in the treatment of depression in the context of CVD. Although physicians may identify patients with CVD as depressed, a variety of obstacles appear to interfere with the treatment of depression including the number of prescribed medications. Adequately treating depression in the context of CVD in primary health care settings will not only improve quality of life for patients but also can potentially have substantial public health impact through improvement of outcomes from both depression and CVD.

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References

1. Pratt L, et al. Depression, psychotropic medication and risk of heart attack: Prospective data from the Baltimore ECA follow-up. *Circulation* 1996;94:3123–3129. [PubMed: 8989119]
2. Ford DE, et al. Depression is a risk factor for coronary artery disease in men: The Precursors Study. *Archives of Internal Medicine* 1998;158(13):1422–1426. [PubMed: 9665350]
3. Penninx BWJH, et al. Depression and cardiac mortality: Results from a community-based longitudinal study. *Archives of General Psychiatry* 2001;58:221–227. [PubMed: 11231827]
4. Frasure-Smith N, Lesperance F, Talajic M. Depression following myocardial infarction: Impact on 6-month survival. *JAMA* 1993;270(15):1819–1825. [PubMed: 8411525]
5. Frasure-Smith N, Lesperance F, Talajic M. Depression and 18-month prognosis after myocardial infarction. *Circulation* 1995;91:999–1005. [PubMed: 7531624]
6. Musselman D, Evans D, Nemeroff C. The relationship of depression to cardiovascular disease: Epidemiology, biology, and treatment. *Archives of General Psychiatry* 1998;55:580–592. [PubMed: 9672048]
7. Gallo JJ, et al. Depression without sadness: Functional outcomes of nondysphoric depression in later life. *Journal of the American Geriatrics Society* 1997;45:570–578. [PubMed: 9158577]
8. Klerman GL. Depression in the medically ill. *Psychiatric Clinics of North America* 1981;4:301–317. [PubMed: 7279728]
9. Carney RM, et al. Depression and coronary heart disease: a review for cardiologists. *Clinical Cardiology* 1997;20:196–200. [PubMed: 9068903]
10. Roose SP, et al. Comparison of paroxetine and nortriptyline in depressed patients with ischemic heart disease. *JAMA* 1998;279(4):287–291. [PubMed: 9450712]

11. Redelmeier DA, Tan SH, Booth GL. The treatment of unrelated disorders in patients with chronic medical diseases. *New England Journal of Medicine* 1998;338:1516–1520. [PubMed: 9593791]
12. Rost K, et al. The role of competing demands in the treatment provided primary care patients with depression. *Archives of Family Medicine* 2000;9:150–154. [PubMed: 10693732]
13. Gallo JJ, et al. Patient characteristics associated with participation in a practice-based study of depression in late life: The Spectrum study. *International Journal of Psychiatry in Medicine*. in press.
14. Bogner HR, et al. Personal characteristics of older primary care patients who provide a buccal swab for APOE testing and banking of genetic material. *Community Genetics* 2004;7:202–210. [PubMed: 15692195]
15. Rose G, McCartney P, Reid DD. Self-administration of a questionnaire on chest pain and intermittent claudication. *British Journal of Preventive and Social Medicine* 1977;31:42–48. [PubMed: 856370]
16. Stewart AL, et al. Functional status and well-being of patients with chronic conditions: Results from the Medical Outcomes Study. *JAMA* 1989;262:907–913. [PubMed: 2754790]
17. Stewart AL, Hays RD, Ware JE. The MOS Short-form General Health Survey: Reliability and validity in a patient population. *Medical Care* 1988;26:724–735. [PubMed: 3393032]
18. Stewart, AL.; Ware, JE., editors. *Measuring Functioning and Well-Being*. Duke University Press; Durham, North Carolina: 1993.
19. Wells KB, et al. The functioning and well-being of depressed patients: Results from the Medical Outcomes Study. *JAMA* 1989;262:914–919. [PubMed: 2754791]
20. McHorney CA. Measuring and monitoring general health status in elderly persons: practical and methodological issues in using the SF-36 health survey. *Gerontologist* 1996;36:571–583. [PubMed: 8942101]
21. Stadnyk K, Calder J, Rockwood K. Testing the measurement properties of the Short Form-36 health survey in a frail elderly population. *Journal of Clinical Epidemiology* 1998;51:827–835. [PubMed: 9762875]
22. Folstein MF, Folstein SE, McHugh PR. “Mini-Mental State”: A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research* 1975;12:189–198. [PubMed: 1202204]
23. Comstock GW, Helsing KJ. Symptoms of depression in two communities. *Psychological Medicine* 1976;6:551–563. [PubMed: 1005571]
24. Eaton WW, Kessler LG. Rates of symptoms of depression in a national sample. *American Journal of Epidemiology* 1981;114:528–538. [PubMed: 7304583]
25. Radloff LS. The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement* 1977;1:385–401.
26. Cooper-Patrick L, et al. Identification of patient attitudes and preferences regarding treatment of depression. *Journal of General Internal Medicine* 1997;7:431–438. [PubMed: 9229282]
27. Colditz GA, et al. Validation of questionnaire information on risk factors and disease outcomes in a prospective cohort study of women. *American Journal of Epidemiology* 1986;123:894–900. [PubMed: 3962971]
28. Tretli S, Lund-Larsen PG, Foss OP. Reliability of questionnaire information on cardiovascular disease and diabetes: cardiovascular disease study in Finnmark county. *Journal of Epidemiology and Community Health* 1982;36:269–273. [PubMed: 7166682]
29. Perkins AJ, et al. Common comorbidity scales were similar in their ability to predict health care costs and mortality. *Journal of Clinical Epidemiology* 2004;57:1040–1048. [PubMed: 15528055]
30. Alexopoulos GS, et al. Comorbidity of late life depression: an opportunity for research on mechanisms and treatment. *Biological Psychiatry* 2002;52(6):543–558. [PubMed: 12361668]
31. Dugan E, et al. The association of depressive symptoms and urinary incontinence among older adults. *The Journal of the American Geriatrics Society* 2000;48(4):413–416.
32. Berkman LF, et al. Enhancing recovery in coronary heart disease patients (ENRICH): Study design and methods. *American Heart Journal* 2000;139:1–9. [PubMed: 10618555]
33. Glassman AH, et al. Sertraline treatment of major depression in patients with acute MI or unstable angina. *JAMA* 2002;288:701–709. [PubMed: 12169073]

Table 1

Characteristics of study sample (n=340).

Characteristics	No Cardiovascular disease (n=191)	Any Cardiovascular disease (n=149)	Statistic _{t(df)} (p)
Demographics			
<i>Age</i>			
Age-mean (SD)	75.2 (5.77)	75.3 (6.16)	$t_{[338]}=-.22$ (0.823)
Gender			
Women, n (%)	n=154 (80.6%)	n=104 (69.8%)	$\chi^2_{[1]}=5.36$ (0.021 [*])
<i>Marital status</i>			
Married or living with partner, n (%)	n=79 (41.4%)	n=55 (36.9%)	$\chi^2_{[1]}=0.69$ (0.405)
<i>Education</i>			
less than high school, n (%)	n=76 (39.8%)	n=61 (40.9%)	$\chi^2_{[1]}=0.05$ (0.830)
<i>Ethnicity</i>			
African American, n (%)	n=66 (34.2%)	n=52 (33.6%)	$\chi^2_{[1]}=0.04$ (0.847)
Attitudes about Depression			
<i>Attitudes about Depression (agreement with statement)</i>			
I believe depression is a medical problem, n (%)	n=138 (77.5%)	n=107 (74.8%)	$\chi^2_{[1]}=0.321$ (0.571)
If my doctor told me I had depression, I could accept that, n (%)	n=158 (82.7%)	n=121 (81.2%)	$\chi^2_{[1]}=0.130$ (0.718)
I would take a medicine for depression if my doctor told me to, n (%)	n=164 (87.2%)	n=131 (89.7%)	$\chi^2_{[1]}=0.495$ (0.482)
Use of Medical Care and Prescribed Medications			
Number of office visits within past six months-mean SD	2.90 (2.64)	3.47 (3.50)	$t_{[338]}=-1.71$ (0.089)
Number of Medications (prescribed) Mean (SD)	3.74 (2.64)	5.79 (3.34)	$t_{[338]}=-6.33$ (<0.001 [*])
Functional Status			
<i>Physical functioning</i>			
Mean (SD)	64.1 (28.4)	51.1 (28.7)	$t_{[338]}=4.14$ (<0.001 [*])
<i>Role Physical</i>			
Mean (SD)	51.0 (40.0)	34.1 (37.7)	$t_{[338]}=3.98$ (<0.001 [*])
<i>Role Emotional</i>			
Mean (SD)	78.0 (38.2)	70.4 (39.8)	$t_{[338]}=1.80$ (0.073)
<i>Social function</i>			
Mean (SD)	74.9 (26.4)	66.7 (28.2)	$t_{[338]}=2.75$ (0.006 [*])
<i>Bodily pain</i>			
Mean (SD)	54.0 (25.1)	53.4 (25.1)	$t_{[337]}=0.224$ (0.823)
<i>General health perception</i>			

Characteristics	No Cardiovascular disease (n=191)	Any Cardiovascular disease (n=149)	Statistic _{t(df)} (p)
Mean (SD)	55.8 (20.1)	45.0 (18.8)	$t_{[338]}=5.06 (<0.001^*)$
Cognitive Factors			
<i>MMSE</i>			
Mean (SD)	27.2 (2.92)	26.8 (2.70)	$t_{[335]}=1.20 (0.232)$
Psychological Status			
<i>Depression (CESD)</i>			
Mean (SD)	13.5 (10.6)	16.1 (11.7)	$t_{[338]}=-2.19 (0.029^*)$

Note: Data were gathered from the Spectrum Survey, 2001–2003.

* p<0.05.

Table 2

Association between cardiovascular disease and physician identification (n=340). 95% confidence interval shown in brackets. CHF, congestive heart failure, MI, myocardial infarction, OR, odds ratio.

Cardiovascular disease	Model 1	Model 2*	Model 3**
	unadjusted OR	adjusted OR	adjusted OR
MI	1.60 [0.93, 2.76]	1.25 [0.66, 2.38]	1.24 [0.65, 2.37]
CHF	2.34 [1.13, 4.85]	2.76 [1.13, 6.76]	2.82 [1.13, 7.07]
Angioplasty	1.50 [0.84, 2.66]	1.43 [0.70, 2.92]	1.41 [0.68, 2.93]
Angina	1.03 [0.43, 2.46]	1.38 [0.50, 3.84]	1.34 [0.50, 3.85]
Stroke	1.37 [0.78, 2.43]	0.90 [0.45, 1.82]	0.89 [0.44, 1.80]

Note: Data were gathered from the Spectrum Survey, 2001–2003

* Adjusted for age, gender, marital status, education, ethnicity, functional status, cognitive status, depressive symptoms, attitudes about depression, and use of medical care

** Adjusted for age, gender, marital status, education, ethnicity, functional status, cognitive status, depressive symptoms, attitudes about depression, use of medical care, and number of medications (excluding antidepressants and anxiolytics)

Table 3

Association between cardiovascular disease and physician report of management of depression (n=188). 95% confidence interval shown in brackets. CHF, congestive heart failure, MI, myocardial infarction, OR, odds ratio.

Cardiovascular disease	Model 1	Model 2*	Model 3**
	unadjusted OR	adjusted OR	adjusted OR
MI	0.54 [0.25, 1.15]	0.61 [0.26, 1.44]	0.69 [0.29, 1.67]
CHF	0.33 [0.14, 0.76]	0.39 [0.15, 1.05]	0.47 [0.16, 1.38]
Angioplasty	0.76 [0.33, 1.73]	1.03 [0.38, 2.77]	1.40 [0.48, 4.06]
Angina	2.68 [0.81, 8.94]	2.22 [0.56, 8.84]	2.18 [0.54, 8.77]
Stroke	0.44 [0.20, 0.96]	0.51 [0.20, 1.29]	0.57 [0.22, 1.49]

Note: Data were gathered from the Spectrum Survey, 2001–2003.

* Adjusted for age, gender, marital status, education, ethnicity, functional status, cognitive status, depressive symptoms, attitudes about depression, and use of medical care

** Adjusted for age, gender, marital status, education, ethnicity, functional status, cognitive status, depressive symptoms, attitudes about depression, use of medical care, and number of medications (excluding antidepressants and anxiolytics)