Depression assessed by the PHQ-9 is reported to be independently associated with adverse outcomes. To date, there are no data concerning the prevalence of depression assessed by the PHQ-9 in outpatients with CVD in Japan.

**Methods**

We conducted a prospective observational study of outpatients who visited the outpatient cardiology clinics of Tokyo Women’s Medical University Hospital (between March 2013 and May 2013), Tokyo Women’s Medical University Medical Center East (between December 2013 and February 2014) and Tokyo Women’s Medical University Aoyama Hospital (March 2014). Patients with dementia, delirium, or other conditions (eg, endstage of other life-threatening diseases) that made it difficult for them to complete a self-reported written questionnaire were excluded. A total of 1,453 outpatients with CVD were enrolled in this study. The protocol was approved by the institutional review board of Tokyo Women’s Medical University.

**Conclusions:** Depression assessed by the PHQ-9 was found in 5.6% of Japanese outpatients with CVD and was an important risk factor for adverse outcomes. (UMIN-CTR No. UMIN 000023514)
Depression in CVD Outpatients

Cardiovascular Diseases
Coronary artery disease was defined as positive stress test findings, coronary angiography demonstrating at least 75% stenosis or coronary spastic angina documented by acetylcholine provocation test, a history of prior myocardial infarction, or a history of revascularization procedures. Valvular and congenital heart diseases were diagnosed by angiographic, hemodynamic or echocardiographic testing or a history of valvular or congenital cardiac surgery. Aortic and mitral regurgitation were defined as valvular disease with at least moderate regurgitation on color-flow Doppler echocardiography. Nonischemic cardiomyopathies were defined as ventricular myocardial abnormalities in the absence of coronary artery disease or valvular, pericardial or congenital heart disease. Pulmonary artery hypertension was defined as an increase in mean pulmonary arterial pressure ≥25 mmHg with a pulmonary wedge pressure ≤15 mmHg at rest estimated by right heart catheterization. Aortic disease, peripheral artery disease and other vascular diseases were diagnosed by angiographic or echocardiographic findings or by a history of vascular surgery or intervention. Arrhythmias and conduction disorders without structural heart disease included atrial, supraventricular and ventricular arrhythmias, sick sinus syndrome and atrioventricular block in the absence of structural heart disease. Hypertension was defined as a systolic blood pressure ≥140 mmHg, a diastolic blood pressure ≥90 mmHg, or a history of treatment for hypertension. Left ventricular ejection fraction (LVEF) was calculated by left ventriculography, echocardiography or radionuclide angiography.

Assessment of Depression
Patient recruitment was conducted by investigators in outpatient cardiology clinics; upon giving consent, participants completed the questionnaires in the waiting area outside the consulting room after their consultation. Subsequently, research coordinators confirmed completion of all items of the questionnaire and then collected them. Depressive symptoms were assessed using the Japanese version of the PHQ-9.20 The PHQ-9 is a self-reported scale containing 9 symptoms that reflect the diagnostic criteria for depression. It has been developed with each of the 9 criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) for clinical depression on a scale from 0 (not at all) to 3 (nearly every day).21 Overall scores may, therefore, range from 0 to 27. Kroenke et al reported that PHQ-9 scores ≥10 had a sensitivity of 88% and a specificity of 88% for major depression;21 Muramatsu et al reported that PHQ-9 scores ≥10 on the Japanese version had a sensitivity of 84% and a specificity of 95% for major depression in Japanese patients.20 Therefore, in this study depression was defined as a PHQ-9 score ≥10.

Follow-up
Patients were observed as outpatients at the hospital or their general practitioner’s clinic at 1- to-3-month intervals up to December 2015. Patients receiving pacing device therapy, including pacemakers, cardiac resynchronization therapy (CRT) and ICD, were also followed every 3–6 months at the pacemaker/ICD clinic. The occurrence of ventricular tachyarrhythmias requiring ICD therapy, including shock and antitachycardia pacing, was obtained by reviewing event details and ECGs stored on the ICD disks. Only episodes of ventricular tachycardia or fibrillation requiring ICD therapy for termination were included in the analysis. Information about deceased subjects was obtained from medical records, family members, their patient’s general practitioner and the admitting hospital. Six (0.4%) patients were lost to follow-up.

Clinical Outcomes
The main clinical outcome was a composite of death from any cause or cardiovascular events from the time of enrollment to the first event. Cardiovascular death was defined as death from myocardial or cerebral infarction, other vascular causes, heart failure or documented sudden cardiac death. Cardiovascular events included non-fatal myocardial infarction, hospitalization for heart failure, unstable angina, revascularization, stroke, refractory arrhythmia, ventricular tachyarrhythmia requiring ICD therapy, and other cardiovascular events. Acute coronary syndrome (ACS) was defined according to the American College of Cardiology/American Heart Association criteria.22,23 Revascularization included angioplasty, stenting and coronary artery bypass grafting. Heart failure was defined on the basis of symptoms and signs, such as dyspnea, rales and ankle edema, and the need for treatment with diuretics, vasodilators, positive inotropic drugs or an intra-aortic balloon pump. Stroke was defined as a new focal neurological deficit of vascular origin lasting >24 h. Stroke was further classified by etiology, including intracranial hemorrhage, ischemia diagnosed by computed tomography or magnetic resonance imaging if available, or uncertain cause. Refractory arrhythmia was defined as a supra-ventricular or ventricular tachyarrhythmia requiring external defibrillation or pacing, intravenous antiarrhythmic drugs, catheter ablation, or ICD, and bradycardia requiring implantation of a pacemaker. Other cardiovascular events included peripheral artery disease, dissecting aortic aneurysm, and rupture of an aortic aneurysm.

Statistical Analysis
Data are presented as mean±standard deviation (SD), number, median and range. Baseline clinical data were compared between the groups with and without depression using Student’s t-test and the Mann-Whitney U test. Categorical variables were subjected to chi-square analysis. Univariate and multivariate analyses using Cox proportional hazards model were performed to determine the relationship of the following baseline characteristics and depression: age ≥65 years, female sex, New York Heart Association (NYHA) functional class III, LVEF ≤35%, hypertension, hemodialysis, implantation of an ICD/CRT with a defibrillator (CRT-D), living status and work status. The cumulative event-free rates were calculated using the Kaplan-Meier method. Differences in event-free rates were compared using the log-rank test. Univariate and multivariate analyses using the Cox proportional hazards model were performed to assess the relationships between depression and the main outcome, independent of the following confounders: age ≥65 years, female sex, nonischemic cardiomyopathy, plasma B-type natriuretic peptide (BNP) concentration using the Shionoria assay ≥170 pg/ml,24,25 NYHA functional class III, LVEF ≤35%, estimated glomerular filtration rate (eGFR) by the Modification of Diet in Renal Disease formula <60 ml/min/1.73 m², diabetes mellitus, hypertension, hemodialysis, implantation of ICD/CRT-D, living status and work status. The forward stepwise method was used for the multivariate analyses with entry or removal on the basis of P values set at 0.05. A P-value of <0.05 was considered significant. Data analyses were performed with SPSS statistical software (version 11.01, SPSS Inc, Chicago, IL, USA).
**Results**

**Patients**

Of the 1,544 patients who provided consent, 1,453 completed the PHQ-9 and were included in this study; 81 (5.6%) patients met the criteria for depression as assessed by the PHQ-9. **Table 1** shows the characteristics and a comparison of patients with and without depression (PHQ-9 \( \geq 10 \)). There was no significant difference in age between groups; the proportions of females, nonischemic cardiomyopathy, plasma BNP level, NYHA functional class and hemodialysis were higher among the patients with depression than in those without. LVEF and the proportion of hypertension were lower in patients with depression than in those without. There was a higher rate of ICD/CRT-D implantation in patients with depression. However, there was no significant difference in the rate of medication use, including \( \beta \)-blockers, between patients with and without depression. Two patients (0.2%) who were diagnosed with major depression by a psychiatrist had taken antidepressants, and their PHQ-9 scores were <10. Compared with patients without depression, more patients with depression were living alone and were unemployed/retired. Multivariate analysis showed that female sex (hazard ratio (HR) 1.77, 95% confidence interval (CI) 1.10–2.83, \( P=0.017 \)), NYHA functional

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**Table 1. Characteristics of Study Patients With CVD**

|                          | Total (n=1,453) | PHQ-9 \( \geq 10 \) (n=81) | PHQ-9 <10 (n=1,372) | P value |
|--------------------------|-----------------|-----------------------------|--------------------|---------|
| **Age (years)**          |                 |                             |                    |         |
| Female                   | 455 (31.3)      | 39 (48.1)                   | 416 (30.3)         | 0.008   |
| **CVD**                  |                 |                             |                    |         |
| Coronary artery disease  | 473 (32.6)      | 19 (23.5)                   | 454 (33.1)         | 0.022   |
| Nonischemic cardiomyopathy | 351 (46.9)    | 33 (40.7)                   | 318 (23.2)         |         |
| Valvular heart disease   | 125 (8.6)       | 3 (3.7)                     | 122 (8.9)          |         |
| Arrhythmia without structural heart disease | 325 (22.4) | 16 (19.8)                   | 309 (22.5)         |         |
| Pulmonary artery hypertension | 4 (0.2)     | 1 (1.2)                     | 3 (0.2)            |         |
| Congenital heart disease | 53 (3.6)        | 3 (3.7)                     | 50 (3.5)           |         |
| Other                    | 117 (8.1)       | 6 (7.4)                     | 116 (8.4)          |         |
| **Plasma BNP (pg/ml)**   |                 |                             |                    |         |
| NYHA functional class    |                 |                             |                    |         |
| I/I/III/IV               | 710/717/26/0    | 27/48/6/0                   | 683/669/20/0       | 0.024   |
| LVEF (%)                 | 51±12           | 49±12                       | 51±15              | 0.023   |
| eGFR (ml/min/1.73 m\(^2\)) | 57±20         | 55±25                       | 57±14              | 0.355   |
| **Medical comorbidities**|                 |                             |                    |         |
| Hypertension             | 729 (50.2)      | 29 (35.8)                   | 700 (51.0)         | 0.008   |
| Diabetes                 | 366 (25.2)      | 16 (19.8)                   | 350 (25.5)         | 0.246   |
| Dyslipidemia             | 618 (42.5)      | 23 (28.4)                   | 118 (8.6)          | 0.060   |
| Hemodialysis             | 32 (2.2)        | 10 (12.3)                   | 22 (1.6)           | <0.001  |
| Cerebrovascular disease  | 14 (1.0)        | 2 (2.5)                     | 12 (0.9)           | 0.153   |
| Major depression         | 2 (0.1)         | 0                           | 2 (0.1)            | 0.731   |
| **Implanted pacing device** |             |                             |                    |         |
| Pacemaker/CRT-P          | 72 (5.0)        | 6 (7.4)                     | 66 (4.8)           | 0.295   |
| ICD/CRT-D                | 96 (6.6)        | 10 (12.3)                   | 86 (6.2)           | 0.035   |
| **Medications**          |                 |                             |                    |         |
| \( \beta \)-blockers     | 823 (56.6)      | 49 (60.5)                   | 774 (56.4)         | 0.472   |
| ACE inhibitors/ARBs      | 834 (57.4)      | 49 (60.5)                   | 785 (57.2)         | 0.563   |
| Spironolactone/eplerenone | 228 (15.7)     | 17 (21.0)                   | 208 (15.2)         | 0.152   |
| Calcium-channel blockers | 424 (29.2)      | 17 (21.0)                   | 407 (29.7)         | 0.094   |
| Aspirin/other antplatelet drugs | 508 (34.8) | 29 (35.8)                   | 479 (34.9)         | 0.870   |
| Warfarin/DOACs           | 487 (33.5)      | 28 (34.6)                   | 459 (33.5)         | 0.832   |
| Amiodarone               | 144 (9.9)       | 9 (11.1)                    | 135 (9.8)          | 0.712   |
| Other antiarrhythmic drugs | 93 (6.4)     | 7 (8.6)                     | 86 (6.2)           | 0.396   |
| Antidepressants          | 2 (0.2)         | 0                           | 2 (0.2)            | 0.735   |
| **Living alone**         |                 |                             |                    |         |
| Employed                 | 678 (46.7)      | 25 (30.9)                   | 653 (47.6)         | 0.003   |
| Unemployed/retired       | 775 (53.3)      | 56 (69.1)                   | 719 (52.4)         |         |

Data are mean±SD or n (%) or median (range). ACE, angiotensin-converting enzyme; ARB, angiotensin II receptor blocker; BNP, B-type natriuretic peptide; CRT, cardiac resynchronization therapy; CRT-D, CRT with a defibrillator; CRT-P, CRT with a pacemaker; CVD, cardiovascular disease; DOAC, direct oral anticoagulant; eGFR, estimated glomerular filtration rate; ICD, implantable cardioverter-defibrillator; LVEF, left ventricular ejection fraction; NYHA, New York Heart Association; PHQ-9, 9-item Patient Health Questionnaire.
Depression and Clinical Outcomes

During an average follow-up of 584±80 days, the main outcome occurred in 85 patients (5.8%). Kaplan-Meier curves for the main outcome are shown in Figure 1. There was a significantly higher incidence of the main outcome in patients with depression than in those without depression. Causes of death and each cardiovascular event are shown in Table 2. The incidence rates of cardiovascular death, hospitalization for heart failure, hospitalization for ACS and hospitalization for stroke were higher in patients with depression than in those without depression. Kaplan-Meier curves for death from any cause, death from cardiovascular cause, and cardiovascular events are shown in Figure 2. There were significantly higher rates of all-cause death, cardiovascular death and cardiovascular events in patients with depression than in those without depression.

Multivariate analysis revealed that patients with depression had an increased risk of the main outcome (HR 4.64, 95% CI 2.24–9.09, P<0.001), which was independent of plasma BNP ≥170 pg/ml, NYHA functional class III, LVEF ≤35%, eGFR <60 ml/min/1.73 m² and unemployment (Table 3).

### Table 2. Causes of Death and Rates of Cardiovascular Events in Study Patients With CVD

| Death from any cause             | PHQ-9 ≥10 (n=81) | PHQ-9 <10 (n=1,372) | P value |
|----------------------------------|------------------|---------------------|---------|
| Cardiovascular death             | 3                | 7                   | 0.064   |
| Sudden death                     | 1                | 3                   | 0.090   |
| Heart failure                    | 1                | 4                   | 0.159   |
| Non-cardiovascular death         | 1                | 10                  | 0.610   |
| Infection-related death          | 0                | 5                   | 0.586   |
| Colon carcinoma                  | 1                | 2                   | 0.036   |
| Cerebral event                   | 0                | 1                   | 0.808   |
| Unknown                          | 0                | 2                   | 0.731   |

| Hospitalization reason           | PHQ-9 ≥10 (n=81) | PHQ-9 <10 (n=1,372) | P value |
|----------------------------------|------------------|---------------------|---------|
| Heart failure                    | 6                | 24                  | 0.001   |
| ACS                              | 2                | 8                   | 0.046   |
| Revascularization                | 1                | 9                   | 0.541   |
| Stroke                           | 2                | 1                   | 0.006   |
| Refractory arrhythmia            | 0                | 3                   | 0.674   |
| Ventricular tachyarrhythmia      | 1                | 3                   | 0.090   |
| Other cardiovascular events      | 1                | 4                   | 0.159   |

ACS, acute coronary syndrome. Other abbreviations as in Table 1.
Figure 2. Kaplan-Meier curves for death from any cause (A), death from cardiovascular cause (B), and a cardiovascular event (C) in cardiovascular outpatients with a score on PHQ-9 of <10 (not depressed) or ≥10 (depressed). PHQ-9, 9-item Patient Health Questionnaire.
10 years, 31% females) had a current stress test (mean age 58 ±
showed that 6% of 750 outpatients with and without a history
Disorders, a standardized structured psychiatric interview,
Moullec et al, using the Primary Care Evaluation of Mental
screening for depression. PHQ-9 may be an accurate and easy-to-use tool to screen for depression in Japanese patients in the cardiovascular outpa-
PHQ-9 was comparable to that reported previously.

Discussion
Our study revealed that the prevalence of depression assessed by the PHQ-9 was 5.6% in Japanese outpatients with CVD. There was a significantly higher incidence of the main outcome (death from any cause or a cardiovascular event), in patients with depression than in those without depression. Depression defined as a PHQ-9 ≥10 was shown to be an independent factor for worse clinical outcomes in Japanese CVD patients.

A recent report by Moullé et al, using the Primary Care Evaluation of Mental Disorders, a standardized structured psychiatric interview, showed that 6% of 750 outpatients with and without a history of coronary artery disease who were referred for an exercise stress test (mean age 58±10 years, 31% females) had a current major depressive disorder and the 21-item self-reported questionnaire Beck Depression Inventory II was useful in screen-
ing for depression. The AHA recommends routine depression screening of patients with coronary artery disease using the PHQ-9. This method is a brief self-reported questionnaire and easy to use in practice. Recent reports showed that a cut-off of PHQ-9 score ≥10 is useful for screening for depression in patients with heart failure or other cardiac conditions, including coronary artery disease. This study is the first to assess the prevalence of depression determined by the PHQ-9 in Japanese outpatients with CVD. Although the method of measuring depression and the patient characteristics were different, the prevalence rate (6%) of depression in stable outpatients with CVD was comparable to that reported previously. The PHQ-9 may be an accurate and easy-to-use tool to screen for depression in Japanese patients in the cardiovascular outpa-
tient clinic.

Among our patients, female sex, NYHA functional class III, living alone and being unemployed were associated with depression. Depression is known to be common among patients with increased NYHA functional class. Japanese patients with heart failure have a higher proportion of nonischemic etiology compared with those in Western countries where the majority of heart patients have an ischemic etiology. In our study, the higher proportion of nonischemic cardiomyopathy might be related to higher NYHA functional class in patients with depression than in those without.

Sociodemographic characteristics are also associated with depression. From the World Mental Health surveys, females are on average twice as likely as men to be depressed; marital status (being separated from a partner, divorced or widowed) was a consistently significant correlate of major depression. Poor social status, such as living alone and being unemployed, was also associated with depression. This is consistent with a previous study in Japan that reported higher depression scores in single persons on in those with lower incomes.

Depression is associated with poor outcomes in patients with CVD, whether outpatients or inpatients. Furthermore, in the present study the rates of cardiovascular death and events, including hospitalization for heart failure, ACS and stroke, were higher in patients with depression than in those without. Although the pathophysiologic mechanisms are not fully understood, depression is an important risk factor for adverse cardiovascular events. Screening for depressive symptoms in outpatients with CVD is important.

Study Limitations
First, this was a cohort study consisting of university hospitals. The prevalence of coronary artery disease was one-third and half of the patients were in heart failure of NYHA functional class II/III. Our results limit generalization to Japanese practice. Second, the studied patients were not consecutively enrolled, although we concentrated on recruiting patients during a short-term enrollment period (1 or 3 months) in each hospital. From these limited data, we could not determine the contribution of depression to the clinical condition of several patients with CVD. Third, 2 patients in the non-depressive group had received antidepressants because of major depression diagnosed before the study. These patients with improved depressive symptoms controlled with antidepressants were not detected by the PHQ-9. Fourth, the overall number of subjects was relatively small; therefore, subgroup analysis was not feasible.
Conclusions
Our results suggested a depression rate of 5.6% in Japanese cardiovascular outpatients, especially those with moderate to severe heart failure, living alone or unemployed. Depression was associated with subsequent cardiovascular outcomes or death and may be an important risk factor for adverse cardiovascular events in outpatients.

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Conflict of Interest Statement
The authors have no conflicts of interest.

Competing Interests
None declared.

References
1. Rozanski A, Blumenthal JA, Kaplan J. Impact of psychological factors on the pathogenesis of cardiovascular disease and implication for therapy. Circulation 1999; 99: 2192 – 2217.
2. Jiang W, Alexander J, Christopher EJ, Kuchibhatla M, Lafuente MJ, Cuffe MS, et al. Relationship of depression to increase risk of mortality and rehospitalization in patients with congestive heart failure. Arch Intern Med 2001; 161: 1849 – 1856.
3. Vaccarino V, Kasl S, Abramson J, Krumholz H. Depressive symptoms and functional decline and death in patients with heart failure. J Am Coll Cardiol 2001; 38: 199 – 205.
4. Carney RM, Blumenthal JA, Cutrellier D, Freedland KE, Berkman LF, Watkins LL, et al. Depression as a risk factor for mortality after acute myocardial infarction. Am J Cardiol 2003; 92: 1277 – 1281.
5. Barth J, Schumacher M, Herrmann-Lingen C. Depression as a risk factor for mortality in patients with coronary heart disease: A meta-analysis. Psychosom Med 2006; 68: 802 – 813.
6. Whooley MA. Depression and cardiovascular disease: Healing the broken heart. JAMA 2006; 295: 2874 – 2871.
7. Nicholson A, Kuper H, Hemingway H. Depression as an aetiologic and prognostic factor in coronary heart disease: A meta-analysis of 6362 events among 146538 participants in 54 observational studies. Eur Heart J 2006; 27: 2763 – 2774.
8. Thombs BD, Bass EB, Ford DE, Stewart KJ, Tsilidis KK, Patel U, et al. Prevalence of depression in survivors of acute myocardial infarction: Review of the evidence. J Gen Intern Med 2006; 21: 30 – 38.
9. Rudisch B, Nemeroff CB. Epidemiology of comorbid coronary artery disease and depression. Biol Psychiatry 2003; 54: 227 – 240.
10. Rutledge T, Reis VA, Linke SE, Greenberg BH! Mills PJ. Depression in heart failure: A meta-analytic review of prevalence, intervention effects, and associations with clinical outcomes. J Am Coll Cardiol 2006; 48: 1527 – 1537.
11. Lesperance F, Frasure-Smith N. Depression in patients with cardiac disease: A practical review. J Psychosom Res 2000; 48: 379 – 391.
12. Havranek EP, Ware MG, Lowes BD. Prevalence of depression in congestive heart failure. Am J Cardiol 1999; 84: 348 – 350.
13. Guck TP, Elssasser GN, Kavan MG, Barone EM. Depression and congestive heart failure. Congest Heart Fail 2003; 9: 163 – 169.
14. Kato N, Kinugawa K, Yoo A, Hatano M, Shiga T, Kazuma K. Relationship of depressive symptoms with hospitalization and death in Japanese patients with heart failure. J Card Fail 2009; 15: 912 – 919.
15. Rahmawati A, Chishaki A, Sawatari H, Tsuichihashi-Makaya M, Ohtsuka Y, Nakai M, et al. Gender disparities in quality of life and psychological disturbance in patients with implantable cardioverter-defibrillators. Circ J 2013; 77: 1158 – 1165.
16. Lichtman JH, Bigger JT Jr, Blumenthal JA, Frasure-Smith N, Kaufmann PG, Lesperance F, et al. Depression and coronary heart disease recommendations for screening, referral, and treatment. Circulation 2008; 118: 1768 – 1775.
17. Moroska AR, Chamberlain AM, Shah ND, Vickers KS, Rummonds TA, Dunlay SM, et al. Depression, healthcare utilization, and death in heart failure: A community study. Circ Heart Fail 2013; 6: 387 – 394.
18. Beach SR, Januzzi JL, Mastromauro CA, Healy BC, Beale EE, Celano CM, et al. Patient Health Questionnaire-9 score and adverse cardiac outcomes in patients hospitalized for acute cardiac disease. J Psychosom Res 2013; 75: 409 – 413.
19. Piepenburg SM, Fuller H, Gelbrich G, Störk S, Warrings B, Ertl G, et al. Comparative potential of the 2-item versus the 9-item patient health questionnaire to predict death or rehospitalization in heart failure. Circ Heart Fail 2015; 8: 464 – 472.
20. Muramatsu K, Miyaoka H, Kamijima K, Muramatsu Y, Yoshida M, Otsubo T, et al. The Patient Health Questionnaire, Japanese version: Validity according to the Mini-International Neuropsychiatric Interview-View-Plus. Psychol Rep 2007; 101: 952 – 960.
21. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. J Gen Intern Med 2001; 16: 606 – 613.
22. Kushner FG, Hand M, Smith SC Jr, King SB III, Anderson JL, Antman EM, et al. 2009 focused updates: ACC/AHA guidelines for the management of patients with ST-segment elevation myocardial infarction (updating the 2004 guideline and 2007 focused update) and ACC/AHA/SCAI guidelines on percutaneous coronary intervention (updating the 2005 guideline and 2007 focused update) a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation 2009; 120: 2271 – 2306.
23. Anderson JL, Adams CD, Antman EM, Bridges CR, Califf RM, Casey DE Jr, et al. 2011 ACCF/AHA focused update incorporated into the ACC/AHA 2007 guidelines for the management of patients with unstable angina/non-ST-elevation myocardial infarction: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation 2011; 123: e426 – e579.
24. van Veldenhuisen DJ, Linsen GC, Jaarsma T, van Gils WH, Hoets AW, Tijssen JG, et al. B-type natriuretic peptide and prognosis in heart failure patients with preserved and reduced ejection fraction. J Am Coll Cardiol 2013; 61: 1498 – 1506.
25. Vogeser M, Jacob K. B-type natriuretic peptide (BNP); Validation of an immediate response assay. Clin Lab 2001; 47: 29 – 33.
26. Egede LE. Major depression in individuals with chronic medical disorders: Prevalence, correlates and association with health resource utilization, lost productivity and functional disability. Gen Hosp Psychiatry 2007; 29: 409 – 416.
27. Mouillac G, Plourde A, Lavoie KL, Sruthanalanie E, Bacon SL. Beck Depression Inventory II: Determination and comparison of its diagnostic accuracy in cardiac outpatients. Eur J Prev Cardiol 2015; 22: 665 – 672.
28. Rutledge T, Reis VA, Linke SE, Greenberg BH. Mills PJ. Depression in heart failure: A meta-analytic review of prevalence, intervention effects, and associations with clinical outcomes. J Am Coll Cardiol 2006; 48: 1527 – 1537.
29. Shiba N, Watanabe J, Shinozaki T, Koseki Y, Sakuma M, Kagaya Y, et al; for the CHART Investigators. Analysis of chronic heart failure registry in the Tohoku district: Third year follow-up. Circ J 2004; 68: 427 – 434.
30. Kawashiro N, Kasanuki H, Ogawa H, Matsuda N, Haginara W. Clinical characteristics and outcome of hospitalized patients with congestive heart failure: Results of the HIJC-HF registry. Circ J 2008; 72: 2015 – 2020.
31. Tsuichihashi-Makaya M, Haraguchi S, Kinagawa S, Yokota T, Goto D, Yokoshiki H, et al; for the JCARE-CARD Investigators. Characteristics and outcomes of hospitalized patients with heart failure and reduced vs preserved ejection fraction: A report from the Japanese Cardiac Registry of Heart Failure in Cardiology (JCARE-CARD). J Am Coll Cardiol 2009; 53: 1893 – 1900.
32. Bromet E, Andrade LH, Hwang I, Sampson NA, Alonso J, de Girolamo G, et al. Cross-national epidemiology of DSM-IV major depressive disorders: Prevalence, correlates and association with health resource utilization, lost productivity and functional disability. Gen Hosp Psychiatry 2007; 29: 409 – 416.