Title:
Long-term outcomes in stroke survivors after discharge from a convalescent rehabilitation ward

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ABSTRACT

Aim: The aim of this study was to investigate the long-term mortality, daily living activities, social activity, and symptoms of depression, in post-stroke patients discharged to their homes from a convalescent rehabilitation ward, and to determine the relationship between demographic variables and long-term outcome.

Methods: This study included 252 consecutive stroke patients (140 men; mean age, 72.4 ± 10.8 years) who had been admitted to a convalescent rehabilitation ward for inpatient rehabilitation. Follow-up assessment was made by postal questionnaire for up to>1 year after discharge, and included the modified Rankin scale, Frenchay activities index (FAI), and Geriatric Depression Scale.

Results: Of the 192 respondents (76.2%), 160 (83.3%) were living at home. Eighty-three (51.8%) were independent. Cumulative post-stroke mortality at 1 and 3 years was 3.7% and 19.4%, respectively. Mean total FAI score was 26.5 ± 10.9, suggesting that social inactivity was common. The estimated prevalence of depression was 21.6%. Coronary artery disease and motor functional independence measures were significantly associated with mortality, whereas age, recurrent stroke, severity of paralysis, and motor functional independence measures were significant predictors of independence. In the crosssectional logistic model, depression symptoms were inversely associated with FAI score.

Conclusions: The mortality rate of patients discharged to their home following inpatient rehabilitation is relatively low. Social inactivity and depression symptoms, however, remain common during the chronic phase, and the severity of depression and restriction of participation were interrelated.

Key words: activity of daily living, depression, long-term outcome, rehabilitation, stroke.

INTRODUCTION

Stroke is a major public health concern, a leading cause of acquired disability, and a frequent cause of death.[1,2] After acute stroke rehabilitation, many patients who have experienced moderate to severe stroke, particularly those in need of intensive rehabilitation programs, are admitted to a specialized ward for rehabilitation where they stay for several months.[3,4] In Japan, the convalescent rehabilitation ward plays an important role in rehabilitating these patients after the acute phase.[2] In a previous study, intensive inpatient rehabilitation in a convalescent rehabilitation ward was shown to successfully alleviate disability in elderly patients post-stroke and led to comparatively favorable functional recovery outcomes at discharge.[2] However, the long-term outcomes of these stroke survivors have not been investigated.

The long-term consequences of stroke have been long recognized.[5] Many stroke survivors with incomplete recovery may experience partial or complete disability and participation restriction and depression, which profoundly affect their daily life.[5,6] Despite this, relatively few prospective observational studies have examined long-term outcome after stroke,[5–9] and only a few studies have focused on depression and social activity after stroke.[6–9] Therefore, this study was conducted to examine long-term mortality, functional status, social activities, and depressive symptoms in patients after stroke, who were discharged to home from a convalescent rehabilitation ward, and to determine the relationship between demographic variables and long-term outcome.

METHODS

Setting

The convalescent rehabilitation ward at Azumino Red Cross Hospital is a 45-bed unit that uses a multidisciplinary team approach. Patients with cerebrovascular disease are admitted to the ward within 2 months from the onset of disease, and the maximum length of stay is limited to 5 months. A team conference, in which the patient, family members, physician, hospital staff, and a social worker all participate, is held once a month in order to evaluate the status of each patient and to discuss treatment plans and discharge destinations.

Subjects

This study included 252 consecutive stroke patients (average age, 72.4 ± 10.8 years; 140 male, 112 female) admitted to the ward for inpatient rehabilitation, and who were discharged to home (discharge dates between August 2006 and March 2010). All subjects were admitted to the ward within 2 months of the initial onset of stroke (average, 32.6 ± 17.7 days). The diagnosis of stroke was confirmed by clinical and radiologic findings. Patients with severe confusion, unstable medical complications, or other acute diseases that could impede active rehabilitation were not included in the study.

Assessment

The follow-up assessment was carried out 1–3 years after discharge (average, 2.0 ± 0.6 years). Patients were invited by letter to complete a questionnaire concerning their type of residence (home, hospital, facility, and death), activities of daily living (ADL) status measured according to the modified Rankin scale (mRS), Geriatric Depression Scale (GDS), and status of their social activities using the Frenchay activities index (FAI). If it was not possible for the patient to complete the questionnaire, a family proxy responded. The mRS consists of six grades, ranging from 0 (no symptoms) to 5 (severe disability), and is dichotomized at 2/3 into independent/dependent.[10] For the GDS, the cut-off used to indicate the presence of depression is a score of 11 out of a maximum 15 points.[11] Social activities status was assessed using the FAI, which is based on the frequency with which 15 activities (e.g. preparing meals or gardening) have been performed.[12] Scoring ranges from 15–60, with higher scores indicating higher levels of activity.

Demographic characteristics at the time of discharge were collected from the Azumino Red Cross Hospital convalescent rehabilitation ward database and from medical records. The following data were collected: age, sex, pre-stroke living situation (alone, with spouse only, or with another family member), premorbid ADL (according to mRS), medical complication(s) (hypertension, atrial fibrillation, coronary artery disease, or diabetes mellitus), history of stroke event (first time or recurrent), stroke type (ischemic or hemorrhagic), severity of paralysis at discharge (Brunnstrom stage), presence of visual deficits (cataract, glaucoma, hemianopia, and diplopia), incontinence, neglect, and functional independence measure (FIM).[13,14]

Statistical analysis

Statistical analysis was done using SPSS for Windows, release 18.0 (IBM, Armonk, NY, USA). The Mann–Whitney *U*-test was used for quantitative variables when comparing two groups. The chi-squared test and Fisher's exact tests were used to test the significance of the association between two qualitative variables. The Kaplan–Meier method was used to estimate the probability of survival 3 years after stroke onset. Correlations between parameters were computed using Spearman's correlation analysis. Multiple logistic regression analysis with forward selection method was used to determine the predictors of death, ADL dependence, and the presence of depression. Stepwise multiple linear regression analysis was applied to determine the predictive GDS score. In all analyses, $P < 0.05$ was considered statistically significant.

Ethics

This study was approved by the Ethics Review Board of Azumino Red Cross Hospital and the Ethics Committee of Shinshu University. Informed consent was obtained from all participating patients or their relatives.

RESULTS

One hundred and ninety-two patients (76.2% of the initial cohort) responded to the follow-up questionnaires. Of these 192 patients, 160 (83.3%) were living at home, six were admitted to hospital, five were living in nursing facilities, and 21 were deceased (Fig. 1). The average age of respondents was 71.7 ± 11.3 years, and 43.8% were female. Medical records indicated that 71.4% of the patients had been admitted with a first-time stroke, and that 56.3% of patients had an ischemic stroke. The mean time from stroke onset to discharge to home was 99.6 ± 50.7 days, and the mean time from discharge to follow up was 2.0 ± 0.6 years. Among those patients living at home (n = 160), 99 were using social services (provisioned under long-term care insurance). Eighty-three patients (51.9%) were classified as independent (mRS ≤ 2); the mean total FAI was 26.5 ± 10.9 (n = 156), and the means GDS score was 6.8 ± 4.1 (n = 153). Thirty-three subjects scored >11 points on the GDS, yielding an estimated prevalence of depression of 21.6% (Table 1). The mean mRS score at the time of discharge was 2.43 ± 1.15 (n = 160), and the mean mRS at follow up was 2.44 ± 1.48 (n = 159). There was no statistically significant difference between the assessments at the two time points.

The mortality rate for the 192 respondents within the first year after stroke onset was 3.7% (95% confidence interval [CI]: 1.0–6.3%), and at 3 years was 19.4% (95%CI: 8.0–30.9%).

Multiple logistic regression analysis was undertaken to determine which factors were the most reliable predictors of death. Death at follow up could be predicted on the basis of coronary artery disease (odds ratio [OR], 5.69; 95%CI: 1.64–19.72; P = 0.006) and motor FIM at discharge (OR, 0.97; 95%CI: 0.95–0.99; P = 0.001; Table 2). Multiple logistic regression analysis was also used to determine which factors were the best predictors of living at home and maintaining independence. ADL independence (mRS ≤ 2) at the time of follow up was used as the dependent variable. The independent variables included age, sex, living situation, premorbid ADL, medical complications, history of stroke event, stroke type, paralysis, visual deficits, incontinence, neglect, motor FIM at discharge, cognitive FIM at discharge, and interval between stroke onset and follow up. ADL independence at follow up could be predicted on the basis of age (OR, 0.93; 95%CI: 0.89–0.97; P = 0.002), recurrence of stroke (OR,

0.33; 95%CI: 0.13–0.85; P = 0.022), moderate paralysis (OR, 0.08; 95%CI: 0.01–0.43; P = 0.003), severe paralysis (OR, 0.10; 95%CI: 0.01–0.81; P = 0.030), and motor FIM at discharge (OR, 1.06; 95%CI: 1.02–1.09; P = 0.001; Table 3).

On univariate analysis, significant correlations were seen between GDS, age, mRS at follow up, FAI, and cognitive FIM at discharge (Table 4). Significant correlations were seen between GDS and mRS ($r = 0.26$; $P < 0.001$), FAI ($r = -0.37$; $P < 0.001$), and cognitive FIM at discharge ($r = -0.21$; $P < 0.001$), and between FAI and age ($r = -0.48$; $P < 0.001$), mRS ($r = -0.73$; $P < 0.001$), and cognitive FIM at discharge ($r = 0.50$; $P < 0.001$). Multiple logistic regression analysis was undertaken in order to determine which variables at discharge were the best predictors of post-stroke depression. The presence of depression (GDS $\geq$ 11) was used as the dependent variable. The independent variables included age, sex, living situation, premorbid ADL, medical complication, history of stroke event, stroke type, paralysis, visual deficits, incontinence, neglect, motor FIM at discharge, cognitive FIM at discharge, and interval between stroke onset and follow up. The presence of depression at follow up could be predicted on the basis of sex (OR, 0.43; 95%CI: 0.18–0.99; P = 0.045), hemorrhagic stroke type (OR, 2.28; 95%CI: 1.01–5.22; P = 0.041) and motor FIM at discharge (OR, 0.98; 95%CI: 0.96–0.99; P = 0.001; Table 5). In the cross-sectional model with a stepwise regression method, the GDS score at follow up was predicted on the basis of FAI score (ß coefficient = −0.39; $P < 0.001$) and sex (ß coefficient = −0.15; P = 0.043) among selected variables collected at follow up (age, sex, mRS at follow up, FAI score, living situation, and long-term care insurance).

DISCUSSION

In the present study, cumulative first-year post-stroke mortality was 3.7% and 3-year mortality was 19.4%, suggesting that the mortality rate of patients discharged to home following inpatient rehabilitation is relatively low. Previously reported predictive factors of survival after stroke include age,[15–17] sex,[15,16] stroke type,[16] premorbid ADL,[15,16] stroke severity,[17] incontinence,[15] and cardiovascular conditions.[16,18] In the present cohort, coronary artery disease and motor FIM at discharge were significantly associated with survival after stroke. A significant association between coronary artery disease and survival after stroke has previously been reported in an aged cohort in a rehabilitation setting.[19,20]

Concerning ADL independence, mRS scores at the time of discharge and at follow up were not found to be significantly different, indicating that functional decline following discharge was modest in the present cohort. Logistic regression analysis indicated that age, stroke recurrence, moderate and severe paralysis, and motor FIM at the time of discharge were all significantly associated with ADL independence at the time of follow up. As expected, ADL independence at discharge and the severity of hemiparesis were also predictors of functional status. In line with previous studies, age is a predictive factor of functional outcome.[5,16,17] Furthermore, the current results support a poor long-term prognosis for patients who experience a recurrent stroke. Recurrent stroke could increase the risk of developing subsequent strokes; or other underlying mechanisms, such as comorbid medical conditions or widespread neuronal injury, could contribute to the poor prognosis.

Depression is a common occurrence following stroke. Hackett et al. reported that the overall estimate of prevalence of depression in stroke survivors was 33%.[21] The prevalence of depression, however, varies over time, with an apparent peak 3–6 months after stroke, and a subsequent decline.22 Whyte and Mulsant estimated that 24 months or more following stroke onset, the prevalence of depression is 19–21%.[22] In the present study, we did not use a structured diagnostic interview for depression (e.g. Mini-International Neuropsychiatric Interview), but the estimated prevalence of post-stroke depression of 21.6% at 1–3 years is comparable with that of previous reports. In a systematic review of the literature focusing on predictors for post-stroke depression, Hackett and Anderson showed that physical disability, stroke severity, and cognitive impairment were consistently associated with post-stroke depression.[23] Predictive factors for post-stroke depression may differ depending on the study setting or the period used for investigation.[23] Considering the etiology of post-stroke

depression, both the direct consequence of neurologic insult and subsequent psychosocial factors are thought to be involved, in a time-dependent manner.[22] It is postulated that the biological mechanism may be more influential in the early post-stroke period, while psychosocial factors become more dominant in the chronic phase.[24] In the current study, the longitudinal model predicted the presence of depression at follow up on the basis of male gender, hemorrhagic stroke type, and motor FIM at discharge, while for the cross-sectional logistic model, the severity of depression was inversely associated with social activity. The mean total FAI score of the present cohort was 26.5 ± 10.9, while the FAI score of community-dwelling elderly of comparative ages has been reported as 41.4 ± 9.3.[25] Social inactivity is common among stroke survivors, even in the chronic phase, and social inactivity and depression are closely related. An association between the severity of depression and social inactivity (i.e. a disorder of instrumental ADL) has been consistently reported not only in patients after stroke, but also in patients with vascular depression.[8,9,26] Several studies have suggested a link between social inactivity and cognitive dysfunction, especially in the executive domains.[27,28] These results indicate the need for clinicians to consider the association between depression and social inactivity and to encourage social activities in elderly stroke survivors living at home. Considering the complexity of the link between depression and social inactivity, the collection of more detailed data and further studies would be of considerable importance in understanding the precise etiological factors associated with post-stroke depression.

A potential source of bias in the present study is the fact that this cohort consisted of a consecutive series of post-stroke patients admitted to a convalescent rehabilitation ward. Subjects with the mildest and with the most severe stroke symptoms are not well represented in this cohort. In Japan, the convalescent rehabilitation ward was introduced into the medical insurance system in 2000. The ward plays an important role in rehabilitation following the acute phase of illness.[29] Such a situation, with long-term, inpatient rehabilitation being provided by a national insurance system, is unique internationally; therefore, extrapolation of the present findings to other health-care systems may be limited. The mean age of this cohort was high, and many patients had cognitive dysfunction, 31.0% had experienced a recurrent stroke episode, and no strict exclusion criteria were applied to limit recruitment into the cohort. As a result, the current cohort is representative of elderly post-stroke rehabilitation patients and does not represent the post-stroke general population.

Conclusion

The mortality of patients discharged home after inpatient rehabilitation is relatively low, and approximately 50% of these patients live independently in their home. Social inactivity and depressive symptoms, however, remain highly prevalent based on the findings of a long-term follow up of this cohort.

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REFERENCES

1 World Health Organization. World Health Report: The top 10 causes of death. Updated June 2011. [cited 14 Augst 2012]. Available from [http://www.who.int/mediacentre/factsheets/fs310/en/].

2 Mutai H, Furukawa T, Araki K, Misawa K, Hanihara T. Factors associated with functional recovery and home discharge in stroke patients admitted to a convalescent rehabilitation ward. *Geriatr. Gerontol. Int.* 2012; 12: 215-222.

3 Sonoda S, Saitoh E, Nagai S, Kawakita M, Kanada Y. Full-time integrated treatment program, a new system for stroke rehabilitation in Japan: comparison with conventional rehabilitation. *Am. J. Phys. Med. Rehabil.* 2004; 83: 88-93.

4 Hama S, Yamashita H, Kato T *et al.* 'Insistence on recovery' as a positive prognostic factor in Japanese stroke patients. *Psychiatry Clin. Neurosci.* 2008; 62: 386-395.

5 Hankey GJ, Jamrozik K, Broadhurst RJ, Forbes S, Anderson CS. Long-term disability after first-ever stroke and related prognostic factors in the Perth Community Stroke Study, 1989-1990. *Stroke* 2002; 33: 1034-1040.

6 Wilkinson PR, Wolfe CD, Warburton FG *et al.* A long-term follow-up of stroke patients. *Stroke* 1997; 28: 507-512.

7 Wolfe CD, Crichton SL, Heuschmann PU *et al.* Estimates of outcomes up to ten years after stroke: analysis from the prospective South London Stroke Register. *PLoS Med.* 2011; 8: e1001033.

8 Carod-Artal J, Egido JA, González JL, Varela de Seijas E. Quality of life among stroke survivors evaluated 1 year after stroke: experience of a stroke unit. *Stroke* 2000; 31: 2995-3000.

9 Ayerbe L, Ayis S, Rudd AG, Heuschmann PU, Wolfe CD. Natural history, predictors, and associations of depression 5 years after stroke: the South London Stroke Register. *Stroke* 2011; 42: 1907-1911.

10 Banks JL, Marotta CA. Outcomes validity and reliability of the modified Rankin scale: implications for stroke clinical trials: a literature review and synthesis. *Stroke* 2007; 38: 1091-1096.

11 Sheikh JI, Yesavage JA. Geriatric Depression Scale (GDS): Recent evidence and development of a shorter version. *Clin. Gerontol.* 1986; 5: 165-173.

12 Schuling J, de Haan R, Limburg M, Groenier KH. The Frenchay Activities Index. Assessment of functional status in stroke patients. *Stroke* 1993; 24: 1173-1177.

13 Granger CV, Hamilton BB, Linacre JM, Heinemann AW, Wright BD. Performance profiles of the functional independence measure. *Am. J. Phys. Med. Rehabil.* 1993; 72: 84-89.

14 Tsuji T, Sonoda S, Domen K, Saitoh E, Liu M, Chino N. ADL structure for stroke patients in Japan based on the functional independence measure. *Am. J. Phys. Med. Rehabil.* 1995; 74: 432-438.

15 Hankey GJ, Jamrozik K, Broadhurst RJ *et al.* Five-year survival after first-ever stroke and related prognostic factors in the Perth Community Stroke Study. *Stroke* 2000; 31: 2080-2086.

16 Elneihoum AM, Göransson M, Falke P, Janzon L. Three-year survival and recurrence after stroke in Malmö, Sweden: an analysis of stroke registry data. *Stroke* 1998; 29: 2114-2117.

17 Appelros P, Nydevik I, Viitanen M. Poor outcome after first-ever stroke: predictors for death, dependency, and recurrent stroke within the first year. *Stroke* 2003; 34: 122-126.

18 Dennis MS, Burn JP, Sandercock PA, Bamford JM, Wade DT, Warlow CP. Long-term survival after first-ever stroke: the Oxfordshire community stroke project. *Stroke* 1993; 24: 796-800.

19 Lai SM, Alter M, Friday G, Sobel E. Prognosis for survival after an initial stroke. *Stroke* 1995; 26: 2011-2015.

20 Meins W, Meier-Baumgartner HP, Neetz D, von Renteln-Kruse W. Predictors of favorable outcome in elderly stroke patients two years after discharge from geriatric rehabilitation. *Z. Gerontol. Geriatr.* 2001; 34: 395-400.

21 Hackett ML, Yapa C, Parag V, Anderson CS. Frequency of depression after stroke: a systematic review of observational studies. *Stroke* 2005; 36: 1330-1340.
22 Whyte EM, Mulsant BH. Post stroke depression: epidemiology, pathophysiology, and biological treatment. *Biol. Psychiatry* 2002; 52: 253-264.
23 Hackett ML, Anderson CS. Predictors of depression after stroke: a systematic review of observational studies. *Stroke* 2005; 36: 2296-2301.
24 Provinciali L, Coccia M. Post-stroke and vascular depression: a critical review. *Neurol. Sci.* 2002; 22: 417-428.
25 Hachisuka K, Saeki S, Tsutsui Y *et al.* Gender-related differences in scores of the Barthel Index and Frenchay activities index in randomly sampled elderly persons living at home in Japan. *J. Clin. Epidemiol.* 1999; 52: 1089-1094.
26 Whyte EM, Mulsant BH, Vanderbilt J, Dodge HH, Ganguli M. Depression after stroke: a prospective epidemiological study. *J. Am. Geriatr. Soc.* 2004; 52: 774-778.
27 Alexopoulos GS, Vrontou C, Kakuma T *et al.* Disability in geriatric depression. *Am. J. Psychiatry* 1996; 153: 877-885.
28 Saito H, Ichikawa K, Nomiyama T *et al.* Changes in activities of daily living during treatment of late-life depression. *Psychogeriatrics* 2008; 8: 12-18.
29 Miyai I, Sonoda S, Nagai S *et al.* Results of new policies for inpatient rehabilitation coverage in Japan. *Neurorehabil. Neural Repair* 2011;25: 540-547.

Fig. 1. Study flowchart.

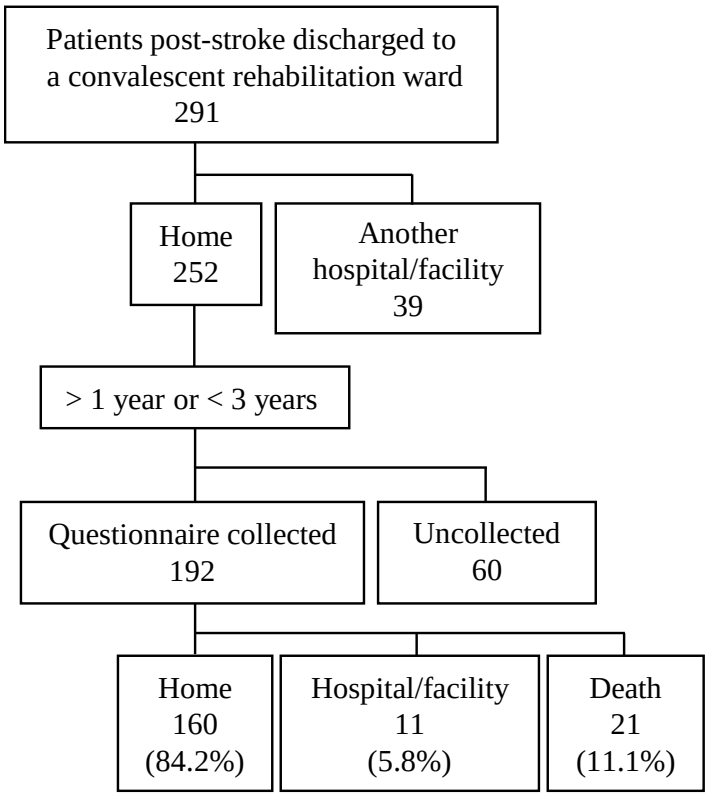

Table 1. Follow-up assessment

Follow-up assessments		n (%) or Mean ± SD
Living situation (n = 161)	Alone	6 (3.7)
	With spouse	50 (31.3)
	With family	105 (65.0)
Social service (Long-term care insurance) (n = 160)	Use	99 (61.8)
	Outpatient day long-term care	69 (43.1)
	Outpatient rehabilitation	25 (15.6)
	Short-term admission	15 (9.4)
	Home-visit nursing	9 (5.7)
	Home-visit rehabilitation	29 (18.1)
	Home-visit long-term care	7 (4.4)
	Home-visit bathing	5 (3.1)
Modified Rankin Scale (n = 159)	0	14 (8.8)
	1	37 (23.3)
	2	32 (20.1)
	3	34 (21.4)
	4	25 (15.7)
	5	17 (10.7)
Frenchay Activity Index (n = 156)	Total	26.5 ± 10.9
	Domestic activities	9.3 ± 5.1
	Leisure/work	7.3 ± 3.1
	Outdoors activities	9.9 ± 4.3
Geriatric Depression Scale (n = 153)	Total	6.8 ± 4.1
	Depression (GDS ≥ 11)	33 (21.6)

GDS, Geriatric Depression Scale.

Table 2. Multiple logistic regression analysis for death

Patient characteristics at discharge		Death at follow-up	
		OR (95% CI)	P
Medical complication			
Coronary artery disease	No	1.00	
	Yes	5.69 (1.64–19.72)	0.006
Motor FIM at discharge		0.97 (0.95–0.99)	0.001

CI, confidence interval; FIM, Functional Independence Measure; OR, odds ratio.

Table 3. Multiple logistic regression analysis for ADL independence (mRS < 2)

Patient characteristics at discharge		ADL independent at follow up	
		OR (95% CI)	P
Age		0.93 (0.89–0.97)	0.002
Stroke event	first	1.00	
	recurrent	0.33 (0.13–0.85)	0.022
Paralysis	normal	1.00	
	slight	0.33 (0.08–1.33)	NS
	moderate	0.08 (0.01–0.43)	0.003
	severe	0.10 (0.01–0.81)	0.030
Motor FIM at discharge		1.06 (1.02–1.09)	0.001

mRS: modified Rankin Scale; FIM: Functional Independence Measure.

Table 4. Correlation between GDS and Age, mRS, FAI, and Cognitive FIM

	Correlation coefficient (P)				
	GDS	Age	mRS	FAI	Cognitive FIM at discharge
Age at follow-up	0.08 (NS)	—	0.52 (**)	-0.48 (**)	-0.35 (**)
mRS at follow-up	0.26 (**)	0.52 (**)	—	-0.73 (**)	-0.43 (**)
FAI at follow-up	-0.37 (**)	-0.48 (**)	-0.73 (**)	—	0.50 (**)
Cognitive FIM at discharge	-0.21 (**)	-0.35 (**)	-0.43 (**)	0.50 (**)	—

**: P < 0.001. Spearman's rank correlation coefficient. FAI, Frenchay activity index; FIM, functional independence measure; GDS, Geriatric Depression Scale; mRS, modified Rankin Scale.

Table 5. Multiple logistic regression analysis for depression (GDS ≥ 11)

Patient characteristics at discharge		Depression at follow-up	
		OR (95% CI)	P
Sex	Male	1.00	
	Female	0.43 (0.18–0.99)	0.045
Stroke type	Ischemic	1.00	
	Hemorrhagic	2.28 (1.01–5.22)	0.041
Motor FIM at discharge		0.98 (0.96–0.99)	0.001

GDS, Geriatric Depression Scale; FIM, Functional Independence Measure.