

# Predictors of Functional Independence and Stress Level of Stroke Survivors at Discharge From Inpatient Rehabilitation

Sharon K. Ostwald, PhD, RN, FGSA; Paul R. Swank, PhD; Myrna M. Khan, PhD

**Background and Research Objective:** Stroke is the primary cause of long-term disability among older adults. This study identifies predictors of functional independence and perceived stress for stroke survivors discharged home from inpatient rehabilitation with a spousal caregiver. **Subjects and Methods:** Stroke survivors (N = 97) were interviewed immediately after discharge to obtain scores on the National Institutes of Health Stroke Scale, Functional Independence Measure (FIM), Stroke Impact Scale, Geriatric Depression Scale-15, Perceived Stress Scale, and Perceived Health Status. Demographic and stroke-related data were abstracted from their inpatient rehabilitation charts. Descriptive and regression analyses determined the relationships among variables and the models that best predicted functional independence and perceived stress. **Results:** Stroke survivors perceived a 50% recovery in their function upon discharge from inpatient rehabilitation. National Institutes of Health Stroke Scale, age, socioeconomic status, and number of complications predicted 63% of the variance of the total FIM score ( $F_{6,88} = 24.64$ ;  $P < .0001$ ). Total FIM, depression, and Stroke Impact Scale Emotion subscale predicted 45% of the Perceived Stress Scale score ( $F_{6,88} = 12.04$ ;  $P < .0001$ ). **Conclusions:** Variables that predict the stroke survivors' recovery are complex as the severity of the stroke combines with demographic and economic variables and depression to predict functional independence and perceived stress. These factors need to be considered when preparing a discharge plan for stroke survivors who are discharged home from rehabilitation.

**KEY WORDS:** depression, recovery of function, rehabilitation, stress, stroke

Discharge to home from rehabilitation marks an important milestone in the life of a stroke survivor. More than 4.8 million stroke survivors are being discharged home to cope with stroke-related disabilities.<sup>1</sup> Although numerous studies have looked at predictors of discharge to home, few studies have considered the perceived stress level of the stroke survivor at the time of discharge.

## Sharon K. Ostwald, PhD, RN, FGSA

Professor and Isla Carroll Turner Chair in Gerontological Nursing, Center on Aging, University of Texas School of Nursing, Houston.

## Paul R. Swank, PhD

Professor, University of Texas Medical School, Houston.

## Myrna M. Khan, PhD

Senior Methodologist, Baylor College of Medicine, Michael E. De Bakey VA Medical Center, Houston, Texas.

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## Corresponding author

Sharon K. Ostwald, PhD, RN, FGSA, University of Texas School of Nursing, SONSCC Room 644, 6901 Bertner St, Houston, TX 77030 (Sharon.K.Ostwald@uth.tmc.edu).

## Factors Associated With Discharge to Home

Factors suggested as predictors of the decision to discharge stroke survivors to their homes include (1) functional level; (2) age; (3) stroke severity and resultant impairments; (4) comorbidities, risk factors, and complications; and (5) the availability of a caregiver at home. Functional impairment, often measured by the Functional Independence Measure (FIM) score, is one of the most important predictors of discharge disposition. A FIM score of 80 or above has a high specificity and sensitivity with a patient's discharge to home.<sup>2-4</sup>

Neurological function, as measured by the National Institutes of Health Stroke Scale (NIHSS) score upon admission to an acute care hospital, predicts post-acute care disposition among stroke survivors.<sup>5</sup> An admission NIHSS score of 5 or less is strongly associated with being discharged home. Because the NIHSS is primarily used in acute care settings, it is not reported in the rehabilitation literature as a predictor of discharge.

Comorbidities and complications independently decrease the odds of going home.<sup>6-8</sup> Diabetes, a common comorbidity, has been associated with increased inpatient length of stay.<sup>9</sup> In addition, depression, a complication affecting 9% to 14% of stroke survivors, has also been associated with a prolonged recovery period, despite pharmacological treatment.<sup>10-12</sup>

The availability of family caregivers also increases the odds of going home. Married survivors, those living with another person, and stroke survivors with unemployed caregivers have a greater chance of being discharged home than to a nursing home.<sup>3,13,14</sup>

### Stress and Coping Theory

Coping is a process by which the demands of an important stressor, such as a stroke, are made manageable. Consistent with the T-Double ABCX Model of Family Adjustment and Adaptation of McCubbin and McCubbin,<sup>15</sup> the stroke survivors' functional independence and psychological responses are a function of their exposure to a stressor (the stroke) and their preexisting vulnerabilities (ie, age and comorbidities) that are buffered by their psychological and social resources. Factors such as depression, lack of finances, or lack of a supportive family may result in poorer outcomes.

### Purpose

The purpose of this study was to identify predictors of functional independence and stress among stroke survivors immediately after discharge from inpatient rehabilitation. Two research questions are addressed in this article: (1) What are the correlates and unique predictors of functional independence (measured by the FIM) immediately after discharge from inpatient rehabilitation? (2) What are the correlates and unique predictors of the stress level (measured by the Perceived Stress Scale [PSS]) reported by stroke survivors immediately after discharge from inpatient rehabilitation? Demographic and medical factors were also examined as possible correlates of function and stress.

### Methods

#### Research Design and Subjects

The study sampled a cross section of 97 stroke survivors at one point in time. Stroke survivors recruited from rehabilitation units at 5 hospital systems within the Texas Medical Center were those who (1) had a stroke within the last 12 months, (2) were at least 50 years of age and spoke English, (3) lived within 50 miles of the Texas Medical Center (to facilitate data collection), and (4) were to be dis-

charged home with a spouse (or significant other). These criteria allowed the investigators to study the predictors of discharging a survivor home while controlling for the presence of a spousal caregiver. Stroke survivors were excluded if they were on hospice or had physical or psychiatric disabilities (ie, global aphasia and dementia) that made them unable to provide data.

### Instruments

Sociodemographic data, stroke-related comorbidities, impairments, and complications that are suggested in the literature as predictors of function at hospital discharge were abstracted from the inpatient rehabilitation charts. Using Hollingshead's formula (A. Hollingshead, *Four factor index of social status*, unpublished manuscript, 1979), education and occupation were used to determine socioeconomic status (SES). In addition, the survivors completed, or the research nurse administered, the following 5 instruments.

The NIHSS measures neurological function in the domains of consciousness, vision, extraocular movements, facial palsy, limb strength, ataxia, sensation, speech, and language. The 15 items are scored on a 3- or 4-point scale, and scores range from 0 to 42, with higher scores indicating greater neurological impairments. The NIHSS correlates well with clinical 3-month outcomes ( $r = 0.79$ ).<sup>16</sup> The interrater reliability for the scale was high (mean  $\kappa = 0.69$ ), and test-retest reliability was 0.66 to 0.77.<sup>17,18</sup> The Cronbach  $\alpha$  coefficient for the NIHSS was .67 in this study.

The FIM, an 18-item instrument, measures performance in self-care, sphincter control, transfers, locomotion, communication, and social cognition on a scale of 1 (total assistance) to 7 (complete independence), with subscores for motor and cognition.<sup>19</sup> Total scores range from 18 to 126, with higher scores representing more independent functioning. The FIM has been found to be a reliable measure of function for stroke survivors (Cronbach  $\alpha = .93$ ).<sup>19</sup> Interrater reliability ranged from 0.86 to 0.88.<sup>20</sup> The internal consistency reliability coefficients (Cronbach  $\alpha$ ) for the FIM in this study were the following: total FIM, .95; motor FIM (including self-care, sphincter control, transfers, and locomotion), .96; and cognitive FIM (including communication and social cognition), .88.

The Stroke Impact Scale (SIS) version 2 was developed using feedback from stroke survivors and their caregivers for the purpose of better understanding the stroke's impact on the quality of their lives.<sup>21</sup> The 59-item SIS measures recovery in 8 domains: strength, hand function, mobility, activities of daily living, emotion, memory, communication,

and social participation. The first 4 domains may be combined into 1 physical domain score. Higher scores indicate fewer negative impacts from the stroke and are indicative of a higher quality of life. Test-retest reliability at 1 week ranged from 0.70 to 0.92 (except for the emotion domain, at 0.57). The domains demonstrated moderate to strong correlations (0.44-0.84) when compared with established outcome measures (eg, FIM, NIHSS, Short Form-36, and Geriatric Depression Scale [GDS]).<sup>21</sup> Participants were also asked to rate their percentage of recovery on a visual analog scale of 0 to 100, with 0 meaning no recovery and 100 meaning full recovery. The internal consistency reliability coefficients (Cronbach  $\alpha$ ) for the SIS subscales in this study were the following: SIS Physical, .95; SIS Emotion, .81; SIS Memory, .93; SIS Communication, .94; and SIS Social Participation, .85.

The PSS is a widely used instrument for measuring the degree to which situations in one's life are appraised as stressful,<sup>22</sup> and it is consistent with the stress-coping framework of McCubbin and McCubbin.<sup>15</sup> Items were designed to identify how unpredictable or uncontrollable events are in a person's life. The PSS used as an outcome variable measures the experienced level of stress as a function of a stressful event, such as a stroke, and has a predictive validity for 4 to 12 weeks. Item scores as rated on a 5-point scale (0, never to 4, very often) range from 0 to 40, with higher scores suggesting higher levels of stress.<sup>23</sup> Scores on the PSS were correlated with reports of the amount of stress experienced during a week ( $r = 0.36$ ;  $P < .0001$ ) and have demonstrated moderate correlations with other measures of appraised stress, including number of life events ( $r = 0.30$ ;  $P < .0001$ ), negative impact of life events ( $r = 0.27$ ;  $P < .0001$ ), and perceived health status ( $r = 0.23$ ;  $P < .0001$ ).<sup>24</sup> Although strongly correlated with depression symptoms, those items were demonstrated to be different constructs.<sup>24</sup> The PSS is available in 10- and 14-item versions. The 10-item scale has a high internal reliability (0.78) and is recommended for research.<sup>24</sup> The Cronbach  $\alpha$  coefficient for the PSS was .85 in this study.

The 15-item GDS (GDS-15), specifically designed to assess depression in older adults, omits somatic items to avoid assessing physical complaints associated with the normal aging process.<sup>25</sup> The 15-item scale has a cutoff of 4/5 for significant depressive symptoms. The GDS-15 had a high level of internal consistency (Cronbach  $\alpha = .80$ ), and all of the individual items were significantly associated ( $P < .01$ ) with the total score.<sup>26</sup> The internal consistency reliability coefficient (Cronbach  $\alpha$ ) for the GDS-15 in this study was .76

Perceived health status is a global report of health. In 1997, Idler and Benyamini<sup>27</sup> reviewed 27 articles

in US and international journals that reported using a global self-rated health measure. They concluded that in 23 of the 27 studies, a global self-report health question was a reliable predictor of survival in populations. Even when known health risk factors were accounted for, their findings were consistent and the effect sizes were quite large.<sup>28</sup> For this reason, perceived health status was measured using the question "How would you rate your health?" Participants responded on a scale of (1) excellent, (2) very good, (3) good, (4) fair, and (5) poor.<sup>27</sup>

### Data Collection Procedures

Data from inpatient rehabilitation charts were abstracted by the study recruiters immediately before discharge. Survivors completed, or the research nurse administered, the test instruments at home immediately after discharge. Written consent was obtained for all participants. A research nurse administering the tests was specially trained in the FIM and certified to administer the NIHSS, using videotapes prepared by the National Institute of Neurological Diseases & Stroke t-PA Stroke Trial Coordinating Center.<sup>18</sup> All data were recorded onto specially designed forms. These forms were scanned into a double-password-protected computer using Cardiff Teleform software, version 8.1.<sup>29</sup> All data forms were stored in a locked cabinet in a locked office, with access limited to the data management staff.

### Data Analysis

Data were exported directly from a Microsoft Access database created by the Cardiff Teleform software into SAS software, version 8.2.<sup>30</sup> In addition to descriptive statistics (mean, standard deviation, and range), Pearson product-moment correlations were reported among the variables of interest. Because these variables were intercorrelated, multiple regression analyses were used to examine the unique contributions of the predictors over and above other predictors, with each regression representing an individual set of hypotheses. The results are exploratory and suggestive of further research, and given the relatively small sample, the likelihood of a type II error has been consciously reduced at the potential expense of a type I error.

## Results

### Sample Characteristics

The demographic characteristics of the stroke survivors are shown in Table 1. Stroke survivors ( $N = 97$ ) had an average age of 66.4 years (SD, 8.9 years) ranging from 50 to 88 years, and 40 (41%) were minorities. The SES mean score,

**TABLE 1** Demographic Characteristics of the Stroke Survivors (N = 97)

Demographic Characteristic	No. (%)
Sex	
Male	74 (76.29)
Female	23 (23.71)
Highest education level	
Less than high school	15 (15.46)
High school graduate	22 (22.68)
Partial college	26 (26.8)
College graduate	20 (20.62)
Graduate/Professional school	14 (14.43)
Race/ethnicity	
African American	19 (19.59)
Asian	4 (4.12)
Hispanic, nonwhite	13 (13.4)
Non-Hispanic white	54 (55.67)
More than one reported group	7 (7.22)
Previous occupation	
Housewife	5 (5.15)
Unskilled worker	2 (2.06)
Semiskilled worker	8 (8.25)
Skilled worker	20 (20.62)
Sales/Clerical	5 (5.15)
Technician	19 (19.58)
Manager/Owner	16 (16.49)
Administrator/Professional	10 (10.31)
Executive/Professional	12 (12.37)
Insurance type	
Medicaid	3 (3.09)
Medicare	11 (11.34)
Medicare with supplement	36 (37.11)
Private	30 (30.93)
Veterans Affairs	10 (10.31)
No insurance	7 (7.22)

calculated using occupation and education according to Hollingshead's formula (A. Hollingshead, *Four factor index of social status*, unpublished manuscript, 1979), was 44.49 (SD, 11.71, range, 19.5-66), suggesting that the survivors came from diverse socioeconomic backgrounds. Seventy-six (78%) had comprehensive insurance coverage (government or private insurance); the remaining 21 (22%) had potentially high out-of-pocket costs. Younger stroke survivors were poorer ( $r = 0.22$ ;  $P = .03$ ), and minorities had less adequate insurance coverage than did non-Hispanic whites ( $\chi^2_5 = 15.23$ ;  $P = .009$ ).

Stroke survivors experienced an average of 2.4 stroke-related comorbidities (SD, 0.85, range, 0-6). The 3 most common comorbidities were hypertension ( $n = 83$ , 86.46%), high cholesterol ( $n = 44$ , 45.83%), and diabetes ( $n = 37$ , 38.54%). Fifty-seven (59%) had more than 3 comorbid conditions. Stroke survivors with lower SES had more previous strokes ( $r = -0.22$ ;  $P = .03$ ) and more stroke-related comorbidities ( $r = -0.23$ ;  $P = .02$ ) than did stroke survivors with higher SES.

Stroke survivors spent a mean of 45.4 days (SD, 60.24 days) in inpatient rehabilitation, with a

median of 24.5 days and a mode of 11 days. The survivors' recovery during inpatient rehabilitation was complicated by a mean of 3.9 complications (SD, 3.18, range, 0-13). The number of complications was associated with the scores on the motor FIM ( $r = -0.47$ ;  $P < .0001$ ) and the NIHSS ( $r = 0.53$ ;  $P < .0001$ ). The 5 most common complications were depression ( $n = 43$ , 45%), sleep disorders ( $n = 33$ , 34%), urinary incontinence ( $n = 31$ , 32%), urinary tract infection ( $n = 27$ , 28%), and falls ( $n = 25$ , 26%).

The descriptive statistics for the variables collected immediately after discharge are shown in Table 2. On average, stroke survivors reported that they had experienced a 50% recovery of function at discharge from inpatient rehabilitation. Although depression was the most common complication, the mean discharge GDS-15 score was only 4.23, with 4/5 being suggested as the cutoff for depressive symptoms. It should be noted, however, that 59% ( $n = 57$ ) of the stroke survivors were discharged on antidepressant medications.

### Correlational Analyses

Correlations among the scores on the tests collected immediately after discharge are displayed in Table 3. Better motor function was associated with better cognitive function (cognitive FIM), less stroke severity (NIHSS), and better physical and social participation, measures of stroke-related quality of life (SIS Physical and Social Participation subscales). The objective measures of function (motor FIM and NIHSS) were associated with the more subjective stroke-related quality-of-life measures (SIS Physical and Social Participation subscales).

**TABLE 2** Means (SD) and Ranges for Variables Collected Immediately After Discharge From Inpatient Rehabilitation

Variable	Mean (SD)	Range
NIHSS	6.02 (4.73)	0-20
FIM (total)	89.08 (25.54)	21-124
Motor FIM	61.13 (21.41)	13-91
Cognitive FIM	28.37 (6.77)	7-35
SIS Physical	49.15 (22.45)	0-94
SIS Emotion	58.43 (12.27)	0-86
SIS Memory	70.83 (24.29)	0-100
SIS Communication	77.67 (26.03)	0-100
SIS Social Participation	41.66 (23.21)	0-100
Percentage recovery	49.81 (24.80)	0-95
Perceived health status	3.16 (1.04)	1-5
Depression (GDS-15)	4.23 (2.84)	0-12
Stress (PSS)	14.33 (7.73)	1-30

Abbreviations: FIM, Functional Independence Measure; GDS-15, Geriatric Depression Scale-15; NIHSS, National Institutes of Health Stroke Scale; PSS, Perceived Stress Scale; SIS, Stroke Impact Scale.

Because of missing data, n varies from 96 to 97.

**TABLE 3** Correlations Among Variables Collected After Discharge From Inpatient Rehabilitation

Variable	Motor FIM	NIHSS	SIS Physical	Cognitive FIM	Depression	Stress	Perceived Health
Motor FIM	Y	0.71 <sup>a</sup>	0.70 <sup>a</sup>	0.52 <sup>a</sup>	-0.15	-0.33	-0.30
NIHSS	-0.71 <sup>a</sup>	Y	-0.60 <sup>a</sup>	-0.60 <sup>a</sup>	0.14	0.32	0.10
SIS Physical	0.70 <sup>a</sup>	0.60 <sup>a</sup>	Y	0.41 <sup>a</sup>	-0.29	-0.31	-0.26
Cognitive FIM	0.56 <sup>a</sup>	0.60 <sup>a</sup>	0.41 <sup>a</sup>	—	-0.28	-0.45 <sup>a</sup>	-0.30
Social participation	0.42 <sup>a</sup>	0.37	0.59 <sup>a</sup>	0.39 <sup>a</sup>	-0.29	-0.27	-0.19
SIS Emotion	0.08	-0.17	0.20	0.26	-0.42 <sup>a</sup>	-0.41 <sup>a</sup>	-0.20
SIS Memory	0.33	0.39 <sup>a</sup>	0.35	0.66 <sup>a</sup>	-0.38 <sup>a</sup>	-0.38 <sup>a</sup>	-0.18
SIS Communication	0.35	0.53 <sup>a</sup>	0.41 <sup>a</sup>	0.76 <sup>a</sup>	-0.30	-0.43 <sup>a</sup>	-0.17
Depression	-0.15	0.14	-0.29	-0.28	Y	0.53 <sup>a</sup>	0.33
Stress	-0.33	0.32	-0.31	-0.45 <sup>a</sup>	0.53 <sup>a</sup>	Y	0.36
Percentage recovery	0.50 <sup>a</sup>	0.36	0.46 <sup>a</sup>	0.39 <sup>a</sup>	-0.32	-0.38	-0.20

Abbreviations: FIM, Functional Independence Measure; NIHSS, National Institutes of Health Stroke Scale; SIS, Stroke Impact Scale. Because of missing data, n varies from 96 to 97.

<sup>a</sup> $P < .0001$ .

Higher perceived stress was associated with worse cognitive function (cognitive FIM), more depressive symptoms, more negative emotions, poor memory, and more difficulty communicating with others, aspects of stroke-related quality of life. Again, the more objective measure of cognitive function (cognitive FIM) was associated with the subjective quality-of-life measures of poor memory and communication (SIS Memory and Communication subscales). Depression (GDS-15) was associated with the quality-of-life measure of emotion (SIS Emotion subscale).

### Multiple Regression Analyses

A series of multiple regression analyses examined predictors of functional independence (FIM) and stress (PSS). Blocks of variables (demographics, complications/impairments, and outcome variables) were entered into separate regression analyses for functional independence and stress. Demographic variables included age, race, sex, and SES. Other variables included NIHSS, SIS subscales, GDS-15, self-reported health, number of complications, and impairments. Those variables within each block making an overall contribution to functional independence or stress were retained. Analyses were repeated with variables systematically eliminated until only variables making a significant unique contribution were retained.

The model predicting functional independence at discharge (total FIM score) included the NIHSS and GDS-15 scores, age, sex, SES, and number of complications. The overall model predicted 63% of the variance in the total discharge FIM, which was significant ( $F_{6,88} = 24.64$ ;  $P < .0001$ ). Greater stroke severity (NIHSS score,  $t_{88} = -0.73$ ;  $P < .0001$ ), older age ( $t_{88} = -3.94$ ;  $P = .0002$ ), lower SES ( $t_{88} = 2.61$ ;  $P = .016$ ), and more complications ( $t_{88} = -2.00$ ;  $P = .048$ ) were significantly associated with less

functional independence. The depression score approached significance ( $t_{88} = -1.84$ ;  $P = .069$ ).

The model predicting stress (PSS score) included scores on the total FIM, GDS-15, self-reported health status, and SIS Emotion subscale; age; and SES. The model predicted 45% of the variance in the stress score, which was significant ( $F_{6,88} = 12.04$ ;  $P < .0001$ ). Higher depression ( $t_{87} = 3.79$ ;  $P = .0003$ ), less functional independence ( $t_{87} = -3.62$ ;  $P = .0005$ ), and more emotional distress ( $t_{87} = -2.90$ ;  $P = .005$ ) were associated with higher perceived stress.

### Discussion

In this study, different variables predicted functional independence and stress outcomes immediately after discharge from inpatient rehabilitation. The variables reported in the literature—stroke severity, more complications, older age, and lower SES—were also significant predictors of functional independence in this study. Studies in the literature suggested that FIM scores greater than 80 and NIHSS scores less than 5 were predictive of discharge to home. Although the average discharge scores of this sample were consistent with these numbers, it should be noted that survivors were discharged home with FIM scores as low as 21 and NIHSS scores as high as 20. This may suggest that when spousal caregivers are present, stroke survivors who would otherwise be placed in nursing homes may be discharged home.

The amount of time actually spent in inpatient rehabilitation varied widely in this study, with some survivors spending almost a year in inpatient rehabilitation. This resulted in a mean length of stay of 45.4 days, which did not reflect the shorter stay of most survivors. The most frequently reported rehabilitation stay (mode) was only 11 days, and the median was less than a month (24.5 days). Relatively short periods of inpatient rehabilitation and high levels of functional dependence have implications for the

preparation of stroke survivors and their family caregivers during their inpatient stay.

The predictors of stress, in addition to poorer function, were depression and emotional distress. Many events accompanying discharge to home may cause stroke survivors to lose self-confidence and feel overwhelmed and out of control. Feeling sad, having nothing to look forward to, or feeling like a burden to others are some of the many feelings that cause stroke survivors distress and increase their level of stress as they prepare to go home. Survivors who expressed less emotional distress, displayed fewer depressive symptoms, and had better function also expressed less stress.

The stroke-specific quality-of-life (SIS) subscale scores for this sample were generally similar to those reported by Duncan et al.<sup>31</sup> However, the SIS subscores were as much as 10 percentage points lower on the physical, emotional, memory, and social participation subscales than those reported in other studies,<sup>32</sup> indicating a lower quality of life. Although not significant predictors of stress, aspects of stroke-related quality of life were significantly associated with stress and depression in this study. Although there is considerable overlap in the items on the depression scale (GDS-15) and the emotion subscale of the SIS, they were independent predictors of stress.

Stress and coping theory suggests that positive coping skills and social support from others may help moderate stress associated with a major life event. Education that moves beyond the focus on short-term physical rehabilitation and includes approaches to problem solving, to assistance with coping skills, and to promotion of engagement in the social world may help prepare survivors for discharge to home. Early recognition and treatment of poststroke depression, the most common complication in this study, is also important. Although the number of comorbidities (an average of 3.9 in this study) may make the identification of poststroke depression more difficult, almost 60% of the stroke survivors were sent home on antidepressant medications. Medication therapy and community support, including referrals to stroke support groups, home health agencies, and rehabilitation therapists, need to be considered as a part of the discharge plan.

This study used a stress and coping framework to investigate stroke survivors' functional independence and perceived stress at discharge from inpatient rehabilitation. Variables suggested in the literature as predictors of functional independence were included in this study along with perceptions of recovery, perceived health, and quality of life (measured by the SIS). Previous work has primarily focused on the predictors of functional independence, with little attention given to the stress experienced by

stroke survivors or the predictors of that stress. Stress and coping theory, however, posits that catastrophic events, such as a stroke, produce both physical and psychosocial outcomes, which need to be identified and addressed for adaptation to occur.

A major limitation of this study is that it presents only a "snapshot" of the stroke survivors at the point of discharge from inpatient rehabilitation. Additional information on the status of the stroke survivors upon admission to the rehabilitation unit would add to the richness of the data and might lead to more implications for rehabilitation nursing practice. In addition, it is important to follow stroke survivors over time to determine whether stress and depression at discharge are predictors of functional independence and stress at 3, 6, or 12 months after discharge. It is also important to continue to monitor the stroke survivors' perceptions of their quality of life over time because stroke-related quality-of-life measures were independent predictors of function and stress. In addition, it would be interesting to investigate the perceived stress and depression levels of the family caregivers at discharge and throughout the first year after discharge to determine whether they are associated with those of the stroke survivors.

For stroke survivors, recovery is a complex process of adapting to the neurological deficits that still exist, the degree of autonomy that they have achieved, the limitations on their ability to control their lives, and their own outlook on life. In all of these areas, nurses help stroke survivors and their families to cope with these continuing deficits. By understanding the correlates and unique predictors of functional independence and stress at discharge, nurses will be better prepared to anticipate issues and help redesign the discharge process to work more holistically with stroke survivors and families who have significant continuing needs. It is important for nurses to stay engaged with the stroke survivor and family before and after the discharge process to facilitate the delivery of home services, to arrange for continuity in rehabilitation therapy, and to assist with the acquisition of financial resources to pay for medications, therapy, and adaptive equipment.

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