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The Stroke Self-Efficacy Questionnaire: measuring individual confidence in functional performance after stroke

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Aims and objectives. The aim was to develop a questionnaire for use by practitioners working in stroke care to measure self-efficacy judgements in specific domains of functioning relevant to individuals following stroke.

Background. The prevalence of stroke is set to rise across the developed world especially amongst the elderly population. Recovery and adjustment in the longer term can be affected by many different factors. Current objective measures of functional performance used in many stroke programmes may not fully explain the extent of personal levels of confidence that could ultimately influence outcome.

Methods. Three separate studies were conducted to develop the Stroke Self-Efficacy Questionnaire. A total of 112 stroke survivors, between 2 and 24 weeks, poststroke participated in the study. Development of the scale was undertaken between 2004 and 2006.

Results. The final 13-item Stroke Self-Efficacy Questionnaire was found to have good face validity and feasibility to use in the recovery period following stroke. Cronbach Alpha was 0.90 suggesting good internal consistency, and criterion validity was high compared with the Falls Efficacy Scale, $r = 0.803$, $p < 0.001$. The Stroke Self-Efficacy Questionnaire was also able to discriminate between those participants walking and not walking.

Conclusions. Preliminary psychometric testing of the new Stroke Self-Efficacy Questionnaire has indicated that it is a valid measure of confidence for functional performance and aspects of self-management relevant for individuals recovering from stroke.

Relevance to clinical practice. The Stroke Self-Efficacy Questionnaire could assist clinicians and researchers working in acute stroke care and rehabilitation to screen levels of confidence of stroke survivors in relation to functional performance and

self-management. The Stroke Self-Efficacy Questionnaire could be used as part of battery of stroke outcome measures to provide a more comprehensive overview of factors influencing performance in the individuals recovering from a stroke.

Key words: chronic illness, measurement, nurses, nursing, self-efficacy, stroke

Introduction

Stroke prevalence has been shown to rise exponentially with age with the incidence being higher in men than women, particularly amongst individuals with ischaemic stroke (Truelsen *et al.* 2006). Despite recent advances in primary prevention and acute management, stroke prevalence in the United Kingdom is also set to rise with a projected increase in the number of survivors living and managing with this chronic disease, particularly amongst the older population (Rothwell *et al.* 2004). Stroke can have devastating consequences for the individual and their families; one-third of people are left with a long-term disability, and the effects can be both physical, cognitive and emotional (National Audit Office 2005). Well-organised stroke rehabilitation has been shown to be effective if delivered early by specialist stroke teams and with sufficient intensity (Langhorne *et al.* 2005). However, currently in the United Kingdom, only around a half of individuals receive sufficient rehabilitation in order to meet their needs in the first six months (Department of Health, March 2005). The transition phases over time in the stroke pathway (e.g. discharge from hospital) can provide uniquely stressful experiences for both individuals and their carers (Intercollegiate Working Party for Stroke 2004, Rittman *et al.* 2004). Inadequate preparation for discharge, which does not include close involvement of the individual and their family in decision making, could lead to further emotional problems. The purpose of this paper is to report the development of a questionnaire for use by practitioners working in stroke care to measure self-efficacy judgements in specific domains of functioning relevant to individuals following stroke.

Background

Disappointment with recovery and rehabilitation may be a contributing factor to the high incidence of negative psychosocial sequelae experienced by stroke survivors (Gainotti & Marra 2002). Progress after stroke and adjustment, as with any other chronic disease, can be viewed as being multidimensional and complex. Recovery milestones viewed by practitioners may not match those perceived by individuals, and research suggests that stroke survivors often have their own personal benchmarks for recovery, which may include

aspects relating to both physical and psychosocial outcomes (Gubrium *et al.* 2003). Nevertheless, rehabilitation is frequently directed towards functional milestones, and despite a move towards more person-centred goal setting, the content and direction of rehabilitation may still in some cases be decided by the professional (Lawler *et al.* 1999, Sabari *et al.* 2000).

The association between psychological and social factors and functional performance following stroke is now emerging (Robinson-Smith 2002, Hellstrom *et al.* 2003). Longitudinal studies suggest that stroke survivors may experience a substantial reduction in their quality of life, which is associated with a longer-term decline in functional independence and related depression (House *et al.* 2001, Jonsson *et al.* 2005). Communication impairment and lower levels of perceived control at one month has also been shown to predict the likelihood of depression at six months (Thomas & Lincoln 2006). While studies such as this can give important determinants and trends within the stroke population, there is still some uncertainty about the precise causal relationship between functional and psychosocial outcomes (Kendall *et al.* 2007).

Understanding personal levels of confidence and emotional responses when individuals are working towards particular targets poststroke may help professionals to understand different responses to rehabilitation. Current measures of functional performance while providing objective information about levels of ability do not reveal perceived confidence in those tasks, nor whether the individual feels confident to continue at a particular level once discharged from rehabilitation (Jones 2006). One psychological construct, which has recently been found to predict both quality of life and disablement poststroke, is *self-efficacy* (LeBrasseur *et al.* 2006). Self-efficacy is a psychological construct likened to 'perceived confidence' and originates from 'Social Learning Theory' (Bandura 1997). It is said to form a major basis of any decision to act, and is defined as 'the belief in one's capabilities to organise and execute the courses of action required to produce given attainments' (Bandura 1997, p. 3). Moreover, self-efficacy has been found to be a predictor of mood, quality of life and functional independence for patients with other chronic conditions (Orbell *et al.* 2001, Barry *et al.* 2003). Studies that have explored self-efficacy in a stroke population are scarce; nonetheless, there are

indications that it is a construct that is strongly related to quality of life and depression (Robinson-Smith *et al.* 2000). Stroke survivors with higher self-efficacy have been shown to experience greater independence in activities of daily living (ADL) and a reduced incidence of falls (Hellstrom *et al.* 2003).

Models of chronic disease self-management are often based on psychological theory and the most widely used is Bandura's self-efficacy (Bandura 1997, Lorig & Holman 2003). To date, there has been minimal research on self-management programmes for stroke; however, reports state that more needs to be done by professionals to empower individuals with the skills to set personal targets, and manage symptoms and functional progress in the longer term (DH/Vascular Programme/Stroke 2007). Qualitative research suggests that individuals can feel abandoned and ill prepared to cope in the longer term poststroke (Wiles *et al.* 2004), and for those individuals, self-efficacy may be low for the skills necessary for successful self-management. Increasingly, self-efficacy is being seen as an important variable in effective self-management, although to find out if it is a mediator of change or in itself a desirable outcome still requires further research (Kendall *et al.* 2007).

Researchers have used a variety of methods to measure self-efficacy (Lee & Bobko 1994), but two methods are dominant in the literature. Self-efficacy magnitude (by summing the number of positive responses) and self-efficacy strength (summing the confidence ratings across all performance levels) (Lee & Bobko 1994). The most common method is the measure of self-efficacy strength, e.g. the Arthritis Self Efficacy Scale (Lorig *et al.* 1989a), and the Self-Efficacy for Exercise Scale (Resnick & Jenkins 2000). Bandura (1997) supports the use of a single judgement, in which the individual rates the strength of his perceived efficacy on a scale of 0–10 or 0–100 for every activity domain.

There are a few studies that have attempted to measure self-efficacy in a stroke population. For example, Robinson-Smith *et al.* (2000) measured outcome in stroke patients using a concept described as self-care self-efficacy. Self-efficacy was measured using a modified scale taken from the Strategies Used by People to Promote Health (SUPPH). Hellstrom *et al.* (2003) measured falls efficacy in a stroke population using a modified version of the Falls Efficacy Scale (FES), known as the FES (Swedish) [FES (S)]. The FES (S) has been developed for use in a stroke population. The scale measures perceived confidence in relation to task performance without falling. It adheres to some of Bandura's guidelines, in that it is task specific to falls, but does not cover the full range of functional tasks and

self-management items relevant to a diverse stroke population.

As is clear from reviewing the literature, a measure of *perceived confidence* held by an individual in a given activity could provide an important insight to understanding both successes and lack of progress in rehabilitation. Self-efficacy theory provides a model of measurement in which efficacy beliefs should be measured in terms of specific judgements within a given area of activity (Bandura 1997). We aimed to develop a scale that measured self-efficacy judgements in specific domains of functioning relevant to an individual following a stroke; therefore, the scale needed to include items which represented particular functional difficulties common to individuals following stroke.

Another area of consideration was the inclusion of items which represented self-management tasks common to stroke. This follows the guidelines suggested by Lorig *et al.* (1996) for the development of self-efficacy scales to use alongside self-management programmes for individuals with a chronic disease. There are currently no recognised guidelines for self-management strategies specific to stroke. However, one qualitative study exploring the aspects of living with a stroke found that many individuals had developed a range of self-management strategies in spite of a diverse degree of functional limitation (Pound *et al.* 1999). Greater self-management skills have also been found to be related to quality of life and degree of adjustment to chronic disease (Lorig *et al.* 1989b). Therefore, a number of items were included which address self-management issues in relation to stroke.

The stages in the development process of the 13-item Stroke Self-Efficacy Questionnaire (SSEQ) are shown in Table 1; these include a number of distinct studies. A preliminary report of initial development, refinement and reduction has been previously reported in 2004 (Jones *et al.* 2004). The method and results from each stage of the development are described in the following sections.

Aim

To develop a questionnaire for use by practitioners working in stroke care to measure self-efficacy judgements in specific domains of functioning relevant to individuals following stroke.

Participants

Tests of the SSEQ at each stage of the development process were carried out with participants more than two weeks and less than 24 weeks after first stroke. All participants were

Table 1 Stages in the development of the Stroke Self-efficacy Questionnaire (SSEQ)

Steps taken in the development of the stroke self-efficacy scale
I. Item generation
1. 29 items generated following review of scales measuring activity and participation following stroke, consultation with stroke specialists and interviews with stroke survivors
2. Items refined to 19 following face validity and feasibility study ($n = 15$).
II. Initial instrument development study ($n = 40$)
1. SSEQ (19) tested on 40 first-time stroke survivors
2. Construct validity: principle components analysis
3. Internal consistency: Cronbach alpha
4. Face validity and feasibility
5. Items reduced to 13, wording modified to emphasise self-efficacy theory
III. Validity study ($n = 53$)
1. 13-item version reviewed by stroke specialists and experts in SE theory
2. Internal consistency: Cronbach alpha
3. Criterion validity study (SSEQ was compared against walking status and Falls Efficacy Scale)
4. Feasibility

over 18 years and had a diagnosis of stroke confirmed through scan reports. All participants were able to provide full informed consent and were excluded if they were unable to read or had difficulty understanding a two-stage instruction.

Participants were recruited from local acute stroke units and community stroke rehabilitation teams. Ethical approval for the study was gained from London-Surrey Borders Research Ethics Committee.

Development of the scale

The development of the scale was undertaken between 2004 and 2006. There were three stages in the development of the scale; initial item generation, instrument development and validity testing. The stages are illustrated more fully in Table 1. A new sample of participants was recruited for each of the three stages of development.

In stage I, a number of methods were used to generate the first list of items; these included in-depth interviews with stroke survivors, consultation with stroke specialists (stroke consultants, therapists and nurses) and a review of tasks commonly measured in relation to functional performance after stroke. Twenty-nine items were identified and ordered by increasing difficulty to represent different levels of task demands. The items asked participants to rate the strength of belief in their ability to achieve each task using a 0–10 scale. Face validity was then addressed by asking experts in stroke rehabilitation ($n = 10$), self-efficacy theory ($n = 3$) and stroke

survivors ($n = 15$) about the relevance and presentation of the items contained within the SSEQ. Following this stage, the items were reduced to 19.

In stage II, we administered the 19-item SSEQ to a new sample of 40 first-time stroke survivors. The responses were analysed with principal components analysis (PCA) using Statistical Package for the Social Scientist (SPSS) version 14.0. PCA enables a test of the underlying dimensions of a new scale, and if appropriate, the number of items can be reduced (Bryman & Cramer 2001). Initially, a correlation matrix was computed for the individual SSEQ items. The number of principal components (i.e. factors) to be retained was determined by inspection of the scree plot. To aid interpretation of the resulting factors, orthogonal varimax rotation was applied and the loading (i.e. correlation) of each SSEQ item with the retained factors was calculated. Only those items with a strong loading to the factors ($r > 0.6$) were retained in the reduced SSEQ. Following this stage, the items were reduced to 13.

For stage III, the items in the final version of the 13-item SSEQ were checked, ordered and reviewed once more by stroke specialists, experts in self-efficacy theory and stroke survivors.

To test criterion validity, the SSEQ (13) was administered to another sample of 57 first-time stroke survivors alongside the FES (Hellstrom *et al.* 2003). As previously mentioned, the FES is a comparable self-efficacy scale, which measures confidence to avoid falling, and is responsive in patients with a moderate to low-level functional ability (e.g. poststroke). We also performed an objective measure of (observed) functional performance using the Modified Rivermead Mobility Index (MRMI) (Lennon & Johnson 2000), and further categorised the sample according to walking status. Scatter plots were carried out to confirm linearity between the SSEQ, FES and MRMI, and associations were examined using a Spearman's Rank Correlation co-efficient. An unrelated *t*-test was used to compare differences in self-efficacy between the two groups according to walking status.

Results

Stage 1: item generation and face validity

The initial list of items referred to are not only the common functional tasks, such as 'moving in bed', 'walking' and 'dressing', but also the tasks related to self-management, such as 'coping with the frustrations of stroke' and 'continuing an individual exercise programme'. Time taken for each stroke subject ($n = 15$) to complete the scale was recorded as between 15 and 20 minutes, and there were no missing

values. However, a ceiling effect was seen in those participants with a high degree of independence in ADL and mobility. Face validity testing enabled 10 items to be removed from the list. They were removed if they were ambiguous or if there was significant overlap with other items. Items were retained if they were easily understood, and were considered highly relevant to functional aspects of progress by the participants and stroke experts. The items were phrased in terms of 'can do' rather than 'will do' to ensure predictions were made about certainty and confidence at the time of administering the questionnaire, and not about future beliefs. This resulted in a reduced SSEQ scale including a total of 19 items.

Stage II: item reduction and refinement

Forty participants completed the 19-item scale. They had a mean age of 68.4 years with a range of 39–94 years, and they were on average 4.2 weeks poststroke. The scale took less than 15 minutes to complete and there were no missing items. A correlation matrix for the remaining 19 items revealed correlations ranging from 0.92 to 0.55, and the majority of correlations were significant at $p < 0.01$. The factors produced by PCA showed that the first factor accounted for 44% of the variance, while the second factor accounted for only an additional 10%. A scree plot confirmed that a one-factor solution was indicated. Items least correlated with the first factor were excluded from the SSEQ, using a cut-off of $r < 0.6$, which resulted in a further six items being removed. The remaining 13 items included washing and dressing, grooming, getting out of bed, and walking about the house, suggesting that this single factor structure relates strongly to functional activity. A Cronbach Alpha reliability coefficient for the 13-item SSEQ was 0.90, which suggests high internal consistency (Bland & Altman 1997).

Stage III: internal consistency, validity and feasibility

Fifty-seven participants completed the final version of the SSEQ (13 items). A copy of the final questionnaire has been included as an appendix. Participants had a mean age of 65.0 years, standard deviation (SD) = 17.9, and were on average 15.8 days poststroke. The SSEQ total score can potentially range from 0 to 130. SSEQ data were found to be normally distributed: mean = 81.8; SD = 25.5; standard error of the mean (SEM) = 3.37; range 30–128 (Fig. 1).

The SSEQ (13) scores showed a strong linear relationship with the FES scores (Spearman's $r = 0.803$, $p < 0.001$) and moderate linear relationship with the MRMI scores (Spearman's $r = 0.464$ $p < 0.001$). There was found to be a significant difference in the SSEQ scores between groups

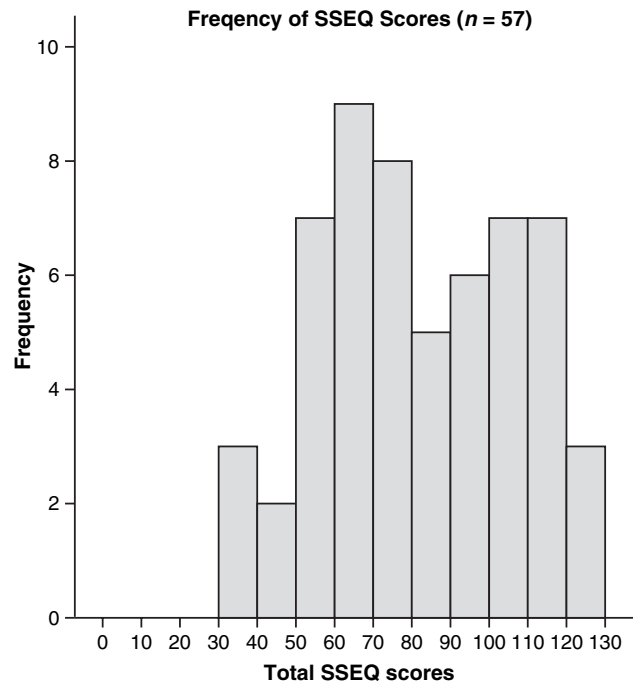


Figure 1 Stroke Self-efficacy Questionnaire score ($n = 57$).

categorised according to walking status $p = < 0.001$. The walking group was categorised as those subjects that were currently able to walk with or without the assistance of one person. The non-walking group consisted of those participants who were not able to walk in any capacity. The walking group had a mean SSEQ = 87.5; SD = 24.4. The non-walking group had a mean SSEQ = 60.4; SD 17.1.

Guidelines for administering the scale were also developed. The guidelines recommended that individuals be presented with the SSEQ and asked to rate the strength of belief in their ability to achieve each of the 13 items. For every item, the person is asked to rate their certainty on a 10-point scale, where 0 = not at all confident and 10 = very confident.

Discussion

The SSEQ is one of the first measures of self-efficacy designed specifically for stroke patients. The use of the SSEQ will enable practitioners working in multi-disciplinary stroke teams to gain more insight into the functional performance of patients undergoing rehabilitation. Moreover, a measure of individuals' strength of confidence in their own capability will also enable stroke researchers to further examine the relationship between objective measures of performance and factors which could influence performance, such as self-efficacy.

While the SSEQ is suitable to administer to the majority of patients following first stroke, a sufficient level of cognitive

functioning is required in order for the individuals to fully reflect on past performance and make confidence judgements about different functional activities. The timing of when to use the scale also requires further testing. We included participants who were more than two weeks poststroke, but this is not beyond the maximum period of natural resolution and recovery (Wityk *et al.* 1994, Kwakkel *et al.* 2004). The timing may be critical in order to enable patients to start forming judgements about their individual capability and confidence to perform specific ADL. However, the influence of time since stroke onset, degree of recovery and setting (hospital or home) on self-efficacy judgements is not fully known at this stage. Self-efficacy theory emphasises that in the face of a new and unique event, such as stroke, an individual will initially rely on past experiences in relation to coping with stressful situations (Bandura 1997). However, new self-efficacy judgements will continue to be shaped based on successes and failures in relation to the specific situation, in this case, functional progress after stroke. The theory also emphasises the importance of a cognitive appraisal of individual capability, which then has the capability to self-regulate and perform certain behaviours (Orbell *et al.* 2001, Hellstrom *et al.* 2003). The SSEQ may provide a more sensitive measure of the reasons for an individual's performance over and above information provided by objective indicators, and also one which can be repeated at different time periods.

As expected, the SSEQ scores showed a strong linear relationship with the Falls Efficacy scores suggesting good criterion validity. The moderate linear relationship with mobility scores suggests that objective measures of performance alone may not provide a comprehensive account of factors influencing functional performance poststroke. Nonetheless, SSEQ scores of those with independent mobility were higher than those with no independent mobility. This is in line with self-efficacy theory which shows that there is a relationship between self-efficacy and other health behaviours, such as mobility and activity (Robinson-Smith 2002, Hellstrom *et al.* 2003). Repeatability and sensitivity of the SSEQ over time, and the association with other psychological measures of mood and self-esteem have been tested in a separate study, and the results of this additional psychometric testing are currently being prepared for publication.

A key component of any stroke rehabilitation programme is patient-centred goals which are agreed between the patient and the practitioner. Proponents of self-efficacy theory state that individuals must believe they are capable of performing specific skills in a specific situation in order to reach a desired goal (Creer & Holroyd 1997). By using the SSEQ early in the rehabilitation process alongside other objective measures, it could be used to set more realistic goals at a level where

success is more likely. In later stages of rehabilitation, the SSEQ may also help to identify those patients with low self-efficacy at risk of difficulty coping with the transition phases, e.g. between hospital and home, or after discharge from community rehabilitation services. Current Department of Health (DOH) policy emphasises the need to develop strategies that support self-care in patients with chronic disease, such as stroke (Department of Health February 2006). There is evidence, however, that patients can often experience a sense of disappointment and dissatisfaction when discharged from stroke rehabilitation services (Dowswell *et al.* 2002, Wiles *et al.* 2004), and this is related to a high incidence of mood disorders in the stroke population (Robinson-Smith 2002). Individual's self-efficacy to manage independently and confidence to persevere and continue to make functional progress in the longer term could be a key influencing factor which determines the development of self-management skills, and the degree of dependency on medical and rehabilitation services (Jones 2006).

Conclusion

Stroke can be sudden in onset but the recovery processes are often lengthy and uncertain (Kirkevold 2002). The biomedical view of recovery has limitations, and a model of recovery which focusses solely on observed objective outcomes does not fully explain how an individual perceives and views their own progress (Faircloth *et al.* 2004). We have designed a new 13-item stroke self-efficacy questionnaire for practitioners to use to screen levels of confidence of stroke individuals in relation to functional performance and self-management. We recommend that the SSEQ could be used as part of a battery of stroke outcome measures to provide a more complete overview of factors influencing performance in those individuals recovering from a stroke. The SSEQ could add value to current practice in stroke care by revealing those individuals that require more targeted support from practitioners in order to build self-confidence with an associated beneficial reduction of mood disorders and life dissatisfaction in the longer term. This paper has presented the first stages in testing the reliability and validity of the SSEQ, but further detailed testing is required. In particular, the SSEQ needs to be tested for applicability in those individuals who are at a later stage in their recovery, and may still have the potential to make substantial changes in their levels of activity and participation. Moreover, research is needed to continue to evaluate the complex relationship between self-efficacy and other physical and psychosocial variables in order to fully understand the determinants of confidence and effective self-management in the longer term poststroke.

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Guidelines for the Stroke Self-efficacy Questionnaire are available on request from the first author (FJ).

Contributions

Study design: FJ, CP; data collection and analysis: FJ, FR and manuscript preparation: FJ, CP, FR

References

- Bandura A (1997) The nature and structure of self-efficacy. In *Self-Efficacy: The Exercise of Control* (Bandura A ed.). W.H. Freeman and Company, New York pp. 3–5.
- Barry L, Guo Z, Kerns R, Duong B & Reid CM (2003) Functional self-efficacy and pain related disability among older veterans with chronic pain in the primary care setting. *Pain* **104**, 131–137.
- Bland M & Altman G (1997) Statistics notes: Cronbach's alpha. *British Medical Journal* **314**, 572–574.
- Bryman A & Cramer D (2001) *Quantitative Data Analysis with SPSS Release 10 for Windows: A Guide for Social Scientists*. Hove, Routledge.
- Creer T & Holroyd K (1997) Self management. In *Cambridge Handbook of Psychology, Health and Medicine* (Baum A, Newman S, Weinman J & McManus C eds). Cambridge University Press, Cambridge pp. 255–258.
- Department of Health (March 2005) *The National Service Framework for Longer Term Conditions*. DH Publications Orderline, London.
- Department of Health (February 2006) *Supporting people with long term conditions to self care: a guide to developing local strategies and good practice*. DH Publications Orderline, London.
- DH/Vascular Programme/Stroke (2007) *A new ambition for stroke: a consultation on a national strategy*. Department of Health, London.
- Dowswell G, Dowswell T, Lawler J, Green J & Young J (2002) Patients' and caregivers' experiences of a physiotherapy intervention 1 year following stroke: a qualitative study. *Journal of Evaluation in Clinical Practice* **8**, 361–365.
- Faircloth C, Boylstein C, Rittman M, Young M & Gubrium J (2004) Sudden illness and biographical flow in narratives of stroke recovery. *Sociology of Health and Illness* **26**, 242–261.
- Gainotti G & Marra C (2002) Determinants and consequences of post stroke depression. *Current Opinion in Neurology* **15**, 85–89.
- Gubrium J, Rittman M, Williams C, Young M & Boylstein C (2003) Benchmarking as everyday functional assessment in stroke recovery. *The Journals of Gerontology: Series B: Psychological sciences and Social Sciences* **58B**, S203–S211.
- Hellstrom K, Lindmark B, Wahlberg B & Fugl-Meyer A (2003) Self-efficacy in relation to impairments and activities of daily living in elderly patients with stroke: a prospective investigation. *Journal of Rehabilitation Medicine* **35**, 202–207.
- House A, Knapp P, Bamford J & Vail A (2001) Mortality at 12 and 24 months after stroke may be associated with depressive symptoms at 1 month. *Stroke* **32**, 696–701.
- Intercollegiate Working Party for Stroke (2004) *National Sentinel Audit: Organisational audit (concise report)*. Royal College of Physicians, London.
- Jones F (2006) Strategies to enhance chronic disease self-management: how can we apply this to stroke? *Disability and Rehabilitation* **28**, 841–847.
- Jones F, Partridge C, Mandy A & Reid F (2004) *Towards a new measurement of self-efficacy following stroke*. British Geriatric Society Conference.
- Jonsson A, Lindgren I, Hallstrom B, Norrving B & Lindgren A (2005) Determinants of quality of life in stroke survivors and their informal caregivers. *Stroke* **36**, 803–808.
- Kendall E, Catalano T, Kuipers P, Posner N, Buys N & Charker J (2007) Recovery following stroke: the role of self-management education. *Social Science and Medicine* **64**, 735–746.
- Kirkevold M (2002) The unfolding illness trajectory of stroke. *Disability and Rehabilitation* **24**, 887–898.
- Kwakkel G, Kollen B & Lindeman E (2004) Understanding the pattern of functional recovery after stroke: facts and theories. *Restorative Neurology and Neuroscience* **22**, 281–299.
- Langhorne P, Taylor G, Murray G, Dennis M, C A, Bautz-Holter E, Dey P, Indredavik B, Mayo N, Power M, Rogers H, Ronning O, Rudd A, Suwanwela N, Widen Holmqvist L & Wolfe C (2005) Early supported discharge services for stroke patients: a meta-analysis of individual patient data. *Lancet* **365**, 501–506.
- Lawler J, Dowdsell G, Hearn J, Forster A & Young J (1999) Recovering from stroke: a qualitative investigation of the role of goal setting in late stroke recovery. *Journal of Advanced Nursing* **30**, 401–409.
- LeBrasseur N, Sayers S, Oullette M & Fielding R (2006) Muscle impairments and behavioural factors mediate functional limitations and disability following stroke. *Physical Therapy* **86**, 1342–1350.
- Lee C & Bobko P (1994) Self-efficacy beliefs: comparison of five measures. *Journal of Applied Social Psychology* **79**, 364–369.
- Lennon S & Johnson L (2000) The modified Rivermead mobility index: validity and reliability. *Disability and Rehabilitation* **22**, 833–839.
- Lorig K & Holman H (2003) Self-management education: history, definition, outcomes and mechanisms. *Annals of Behavioral Medicine* **26**, 1–7.
- Lorig K, Chastain R, Ung E, Shoor S & Holman H (1989a) Development and evaluation of a scale to measure perceived self-efficacy in people with arthritis. *Arthritis and Rheumatism* **32**, 37–44.
- Lorig K, Seleznick M, Lubeck D, Ung E, Chastain R & Holman H (1989b) The beneficial outcomes of the Arthritis Self-management Course are inadequately explained by behaviour change. *Arthritis and Rheumatism* **32**, 91–95.
- Lorig K, Stewart A, Ritter P, González V, Laurent D & Lynch J (1996) *Outcome Measures for Health Education and Other Health Care Interventions*. SAGE Publications, London.

National Audit Office (2005) *Reducing Brain Damage, Faster Access to Better Stroke Care*. NAO, London.

Orbell S, Johnston M, Rowley D, Davey P & Epsley A (2001) Self-efficacy and goal importance in the prediction of physical disability in people following hospitalisation: a prospective study. *British Journal of Health Psychology* 6, 25–40.

Pound P, Gompertz P & Ebrahim S (1999) Social and practical strategies used by people living with stroke. *Health and Social Care in the Community* 7, 120–128.

Resnick B & Jenkins L (2000) Testing the reliability and validity of the self-efficacy for exercise scale. *Nursing Research* 49, 154–159.

Rittman M, Faircloth C, Boylstein C, Jaber F, Williams C, van Puymboroek M & Ellis C (2004) The experience of time in the transition from hospital to home following stroke. *Journal of Rehabilitation Research and Development* 41, 259–268.

Robinson-Smith G (2002) Self-efficacy and quality of life after stroke. *Journal of Neuroscience Nursing* 34, 91–98.

Robinson-Smith G, Johnston M & Allen J (2000) Self-care self-efficacy, quality of life, and depression after stroke. *Archives of Physical Medicine and Rehabilitation* 81, 460–465.

Rothwell P, Coull A, Giles M, Howard S, Silver S, Bull L, Gutnikov S, Edwards P, Mant D, Sackley C, Farmer A, Sandercock P, Dennis M, Warlow C, Bamford J & Anslow P (2004) Changes in stroke incidence, mortality, case fatality, severity, and risk factors in Oxfordshire, UK from 1981–2004 (Oxford Vascular Study). *Lancet* 363, 1925–1933.

Sabari SJ, Meisler J & Silver E (2000) Reflections upon rehabilitation by members of a community based stroke club. *Disability and Rehabilitation* 22, 330–336.

Thomas S & Lincoln N (2006) Factors relating to depression after stroke. *British Journal of Clinical Psychology* 45, 49–61.

Truelsen T, Piechowski-Jozwiak B, Bonita R, Mathers C, Bogovsslavsky J & Boysen G (2006) Stroke incidence and prevalence in Europe: a review of available data. *European Journal of Neurology* 13, 581–598.

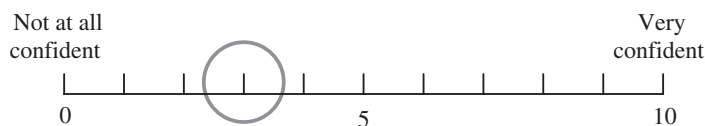
Wiles R, Ashburn A, Payne S & Murphy C (2004) Discharge from physiotherapy following stroke: the management of disappointment. *Social Science and Medicine* 59, 1263–1273.

Wityk R, Pessin M, Kaplan R & Caplan L (1994) Serial assessment of acute stroke using the NIH Stroke Scale. *Stroke* 25, 362–365.

The STROKE SELF-EFFICACY QUESTION NAIRE

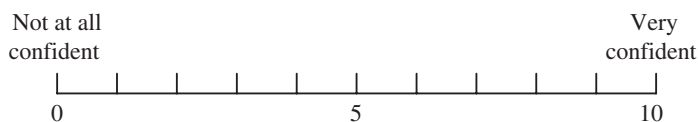
These questions are about your confidence that you can do some tasks that may have been difficult for you since your stroke.

For each of the following tasks, please circle a point on the scale that shows how confident you are that you can do the tasks now in spite of your stroke. Where 0 = *not at all confident* and 10 = *very confident*

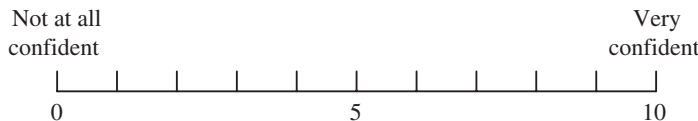


How *Confident* are you *now* that you can

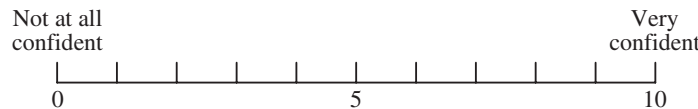
1. Get yourself comfortable in bed every night



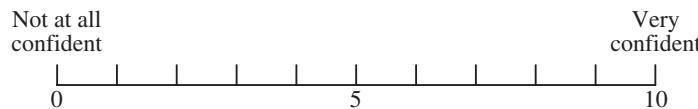
2. Get yourself out of bed on your own even when you feel tired



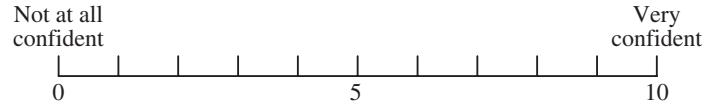
3. Walk a few steps on your own on any surface inside your house.



4. Walk about your house to do most things you want.



5. Walk safely outside on your own on any surface.



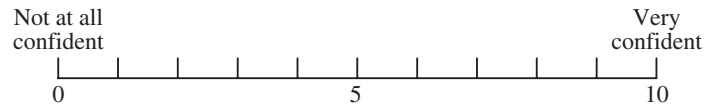
6. Use both your hands for eating your food.



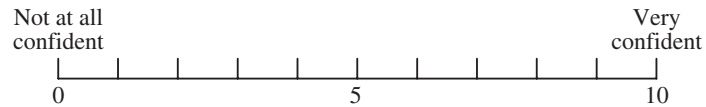
7. Dress and undress yourself even when you feel tired.



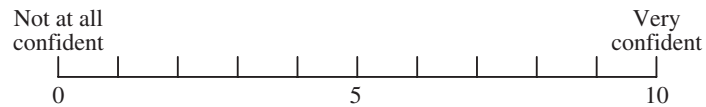
8. Prepare a meal you would like for yourself.



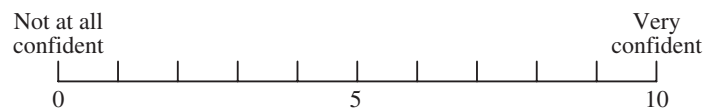
9. Persevere to make progress from your stroke after discharge from therapy.



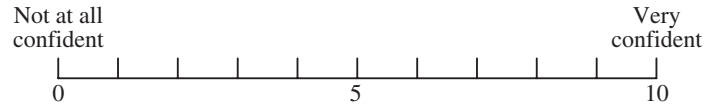
10. Do your own exercise programme every day.



11. Cope with the frustration of not being able to do some things because of your stroke.



12. Continue to do most of the things you liked to do before your stroke.



13. Keep getting faster at the tasks that have been slow since your stroke.

