

Stroke Self-Management Support Improves Survivors' Self-Efficacy and Outcome Expectation of Self-Management Behaviors

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Background and Purpose—Evidence shows self-management programs are associated with improved recovery outcomes.

This article reports on the effectiveness of a new nurse-led self-efficacy-based stroke self-management program.

Methods—A randomized controlled trial of participants recruited from 3 acute stroke units was conducted. The intervention group received the 4-week stroke self-management program. The control group received usual care. All participants were assessed at baseline and 8 weeks after randomization. Data were analyzed using generalized estimating equations.

Outcomes included self-efficacy, outcome expectation, and satisfaction with performance of self-management behaviors.

Results—One hundred twenty-eight participants were randomized with mean age, 67.46 years (SD, 11.95); 59% men; and mean duration poststroke, 45 days (SD, 26.16). At 8 weeks of follow-up in the intention-to-treat population, the intervention group improved significantly in self-efficacy (95% confidence interval, 2.55–12.45; $P < 0.01$), outcome expectation (95% confidence interval, 5.47–14.01; $P < 0.01$), and satisfaction with performance of self-management behaviors (95% confidence interval, 3.38–13.87; $P < 0.01$) compared with the control. Similar results were obtained at 8 weeks of follow-up in the per-protocol population.

Conclusions—The stroke self-management program improved survivors' self-efficacy, outcome expectation, and satisfaction with performance of self-management behaviors.

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Key Words: follow-up studies ■ randomized controlled trial ■ residence characteristics ■ self-efficacy ■ self-management ■ stroke



A meta-review of 13 systematic reviews found self-management interventions significantly improved stroke survivors' activities of daily living, level of independence, and mortality.¹ Underpinning complex interventions, such as stroke self-management programs (SESSMP), with a theoretical premise enables its systematic development, implementation and evaluation, and coherence in explaining changes in outcomes.² A systematic review found Bandura construct of self-efficacy was the most common theoretical premise underpinning SESSMPs. Although the results showed potential program benefits in self-efficacy and health-related quality of life ≤ 6 months post-program, there was insufficient evidence to draw conclusions on the effective program regimen and dose.³ Outcome expectation—a construct closely related to self-efficacy—also has an important influence on stroke self-management behaviors.⁴ However, few studies have examined the role of outcome expectation, or a person's assessment of the likelihood of an outcome to occur when they perform a behavior, in self-management behaviors.⁵

This article reports a randomized controlled trial aimed at determining the effectiveness of a new nurse-led self-efficacy-based SESSMP on survivors' recovery outcomes.

Methods

This study was registered before conducting the research. The data that support the findings of this study are available from the corresponding author on reasonable request.

Design

An assessor-blinded randomized controlled trial was conducted. It was approved by the research ethics committees of the university and the participating hospitals. All participants gave written informed consent. A study protocol detailing the trial has been published.⁶

Participants

A convenience sample of 128 adult stroke survivors, clinically diagnosed with a stroke, who scored >18 in Mini Mental State Examination and were discharged home agreed to participate. Those who had transient ischemic attack, cerebrovascular events because of

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malignancy or head injuries, a mental illness or received a SESSMP in the preceding year were excluded.

Sample Size

One hundred and twenty-eight participants (64 per group) were required to detect a significant mean difference in self-efficacy between the intervention and control groups at 8 weeks after randomization ($\alpha=0.05$; $\beta=0.80$) based on an estimated medium effect size (0.5) in self-efficacy in self-management.⁶

Randomization and Blinding

Participants were randomized on a 1:1 ratio to the intervention or control groups according to a computer-generated randomization sequence. Allocation concealment was achieved by using sequentially numbered, opaque, and sealed envelopes.

Intervention

All participants in both groups received usual stroke care; for example, health talks organized by hospitals or community centers. In addition, participants in the intervention group received the SESSMP facilitated by a registered nurse experienced in stroke care and self-management. The program, underpinned by Bandura constructs of self-efficacy and outcome expectation, included a home visit (week 1), two 2-hour community group sessions (week 2–3), and 3 follow-up phone calls (week 4).⁶ An expert panel approved the SESSMP protocol. Multimodal strategies informed by self-efficacy constructs, such as goal setting, modeling, and verbal persuasion by the peer stroke participants and the nurse were adopted. The participants received a workbook that provided space for recording their goal(s) in stroke recovery with related action plans and 2 DVDs containing videos of ≈ 15 survivors' experience on managing stroke successfully. The participants discussed with the nurse after video viewing to help recall their own recovery journey. Strategies adopted to achieve verbal persuasion included acknowledging incremental successes, reinforcing expectations of positive outcomes, and stimulating thinking and encouraging practice of strategies to manage stroke.

Measures

Data were collected at baseline and 8 weeks after randomization (1 month after completing the SESSMP for the intervention group). Self-efficacy in self-management was measured by the Stroke Self-Efficacy Questionnaire,^{7,8} outcome expectation of performing self-management behaviors measured by the Stroke Self-Management Outcome Expectation Scale,⁶ and satisfaction with performance of self-management behaviors measured by the Stroke Self-Management Behaviors Performance Scale.⁶ All measuring tools had previously shown high internal consistency and acceptable convergent validity. The α coefficients of Stroke Self-Efficacy Questionnaire, Stroke Self-Management Outcome Expectation Scale, and Stroke Self-Management Behaviors Performance Scale in this study were 0.94, 0.93, and 0.88 respectively.

Statistical Analysis

Statistical analysis was performed using the IBM SPSS Statistics, version 22 (SPSS, Inc, Chicago, IL). Generalized estimating equation models were used to assess the differential changes in outcome variables across the time points between the 2 groups. Potential confounding factors entered in the generalized estimating equation models included baseline Barthel activities of daily-living index score and baseline characteristics with a P value <0.25 ^{9,10} (employment [$P=0.14$], type of stroke [$P=0.11$], duration between stroke onset and baseline [$P=0.04$], and Mini Mental State Examination score [$P=0.05$]). Outcome variables were analyzed for participants included in the intention-to-treat and per-protocol populations respectively.

Results

Participants' mean age was 67.46 years; SD, 11.95; and range, 38 to 95 years. Baseline characteristics and outcome variables for participants in both groups were similar, except for the SESSMP group who had a significantly longer duration (days) between stroke onset and baseline assessment ($P=0.04$). The overall attrition rate was 16.4% (Figure).

Twenty-eight (43.8%) participants in the SESSMP group received at least 1 but not all program sessions, mainly because of family members' or carers' unavailability to accompany the participant, clashes with other personal commitments, and not interested in using phones.

At 8 weeks of follow-up in the intention-to-treat population ($n=128$), the SESSMP group had significantly greater improvements in Stroke Self-Efficacy Questionnaire, Stroke Self-Management Outcome Expectation Scale, and Stroke Self-Management Behaviors Performance Scale assessment compared with the control in the generalized estimating equation models adjusted for confounding variables. The direction, magnitude, and significance of change in the scores of outcome variables across time between the 2 groups in the intention-to-treat and per-protocol ($n=79$) populations were similar (Table).

Discussion

The SESSMP significantly improved participants' self-efficacy, outcome expectation, and satisfaction with performance of self-management behaviors at 8 weeks (1 month post-program). Previous studies examining SESSMPs underpinned by Bandura construct of self-efficacy consistently reported significant improvement in self-efficacy immediately¹¹ and at 6 months¹² post-program.

We pioneered the use of videos of successful stroke survivors' experience to share and thus provide models for self-management and to stimulate discussion with the SESSMP nurse. The study's significant improvement in

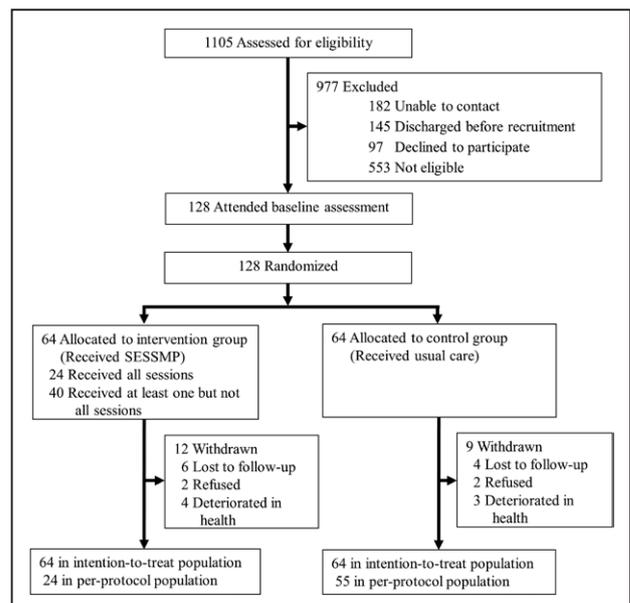


Figure. Participant flowchart. SESSMP indicates the self-efficacy-based stroke self-management program.

Table. Adjusted Generalized Estimating Equation Models for Outcome Variables Across Time (Intention-to-Treat Versus Per-Protocol Populations)

Outcomes	B	Intention to Treat		B	Per Protocol	
		95% CI	P Value		95% CI	P Value
Stroke Self-Efficacy Questionnaire	7.50	2.55–12.45	<0.01*	9.30	2.22–16.38	0.01†
Stroke Self-Management Outcome Expectation Scale	9.74	5.47–14.01	<0.01*	11.34	5.98–16.70	<0.01*
Stroke Self-Management Behaviors Performance Scale	8.63	3.38–13.87	<0.01*	7.71	0.56–14.86	0.04†

B indicates estimated coefficient; CI, confidence interval.

* $P < 0.01$; † $P < 0.05$.

self-efficacy and outcome expectation supported the use of Bandura constructs of self-efficacy and outcome expectation in underpinning the SESSMP and the multi-faceted methods in enhancing these 2 outcomes. As expected from the constructs, these significant improvements were associated with significant improvement in performance of stroke self-management behaviors.

This randomized controlled trial was limited by excluding stroke survivors with severe language and cognitive impairment and no differentiation of participants regarding the type of stroke and level of physical independence. A follow-up period of ≤ 6 to 12 months would be valuable to determine the longer term program effectiveness. Transport problems were a major barrier to participating in the intervention sessions. Strategies to address these challenges in future studies include arranging the intervention sessions in community centers near the participants' neighborhood.

Conclusions

The positive role of self-efficacy and outcome expectation in designing and providing the SESSMP in this randomized

controlled trial have been reinforced given the improvement in stroke self-management behaviors.

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Disclosures

None.

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