

# Quality of Life of Stroke Survivors: A 3-Month Follow-up Study

Sangkaew Rachpukdee, MSc,\* Nopporn Howteerakul, PhD,\*  
Nawarat Suwannapong, PhD,\* and Smarn Tang-aroonin, MD†

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The assessment of stroke survivors' quality of life (QoL) is essential for planning poststroke therapy strategies. This study aimed to assess, compare, and identify predictors of unsatisfactory QoL in different dimensions of stroke survivors at 1 month and 3 months poststroke. A total of 125 stroke survivors were recruited from 4 public hospitals under the auspices of the Department of Medical Services, Bangkok Metropolitan Administration, Thailand, and followed for 3 months. QoL was assessed using the self-administered SF-36 Health Survey, version 2.0. Six specific dimensions of QoL—physical function, role-physical, bodily pain, general health, vitality, and role-emotional—were significantly improved at 3 months poststroke; however, 2 dimensions—social function and mental health—were not. Multiple logistic regression analysis revealed that at 1 month poststroke, significant predictors of unsatisfactory QoL were being dependent (Barthel Index score <80), severe cognitive impairment (Canadian Neurological Scale score <7), right hemisphere lesions, being single or widowed, age  $\geq 60$  years, and being unemployed poststroke. At 3 months poststroke, significant predictors of unsatisfactory QoL were being dependent (Barthel Index score <80), severe cognitive impairment (Canadian Neurological Scale score <7), being single or widowed, being unemployed poststroke, and self-supporting/other support for treatment fees. This follow-up study demonstrated a significant improvement in QoL from 1 month to 3 months poststroke. Predictors of QoL varied both over time poststroke and over the specific dimensions of QoL being considered. **Key Words:** SF-36—Barthel Index—Canadian Neurological Scale—prospective study.

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Assessment of quality of life (QoL) in patients poststroke has received increasing attention in stroke therapy.<sup>1</sup> Stroke is a major health problem and one of the most expensive diseases in developed countries.<sup>2</sup> Stroke

results in both impairment, limitation in basic daily activities, and impacts on participation in community activities, such as returning to work.<sup>3,4</sup> An assessment of QoL poststroke would provide a more holistic picture of stroke recovery, especially because of the wide spectrum of symptoms and impairments associated with stroke.<sup>5</sup> In most industrialized countries, stroke is the third-leading cause of death, after heart disease and cancer.<sup>6,7</sup>

In Thailand, stroke is the third-leading cause of death and probably the major cause of disability in the adult population.<sup>8</sup> The estimated prevalence is 690/100,000 population aged >20 years in Bangkok<sup>9</sup> and 1120/100,000 elderly population in Thailand.<sup>10</sup> The prevalence of stroke is highest (3.3%) in Bangkok and lowest (1.1%) in northeastern Thailand.<sup>11</sup> Approximately 30% of stroke patients die, and 30% remain disabled or unable to return to work. Approximately 30% recover and regain independence in the activities of daily living (ADLs); however,

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From the \*Faculty of Public Health, Mahidol University, Bangkok, Thailand; and †Prasat Neurological Institute, Ministry of Public Health, Bangkok, Thailand.

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Address correspondence to Nopporn Howteerakul, PhD, Department of Epidemiology, Faculty of Public Health, Mahidol University, 420/1 Rajvithi Road, Bangkok 10400, Thailand. E-mail: [npp92432@yahoo.com](mailto:npp92432@yahoo.com).

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they need lifelong drug treatment.<sup>12</sup> Neurologic deficits and disabilities after recovery from the disease include hemiplegia, impaired body balance and ambulation, difficulty swallowing and speaking, impaired visual perception, and loss of bowel and bladder control.<sup>13</sup>

Physical defects in stroke survivors can also cause psychological changes, such as aggression, impatience, stress, negativism, and depression. Depression is the most common psychological disorder reported in stroke survivors, with a prevalence ranging from 23% to 75%,<sup>14</sup> and is considered the most powerless state and a significant cause of suicide in these survivors.<sup>15</sup> Previous studies have identified social support and depression as predictors of recovery in stroke survivors with hemiplegia.<sup>16</sup> Depression was found to have a 70% correlation with survivors' ability to perform ADLs and has a negative affect on their QoL.<sup>17</sup>

The concept of QoL, used in the behavioral sciences, has recently been used to assess the outcomes of healthcare interventions, expressed in terms other than survival. QoL assessment is considered an appropriate tool in medical technology assessment.<sup>18</sup> To date, few studies of QoL in stroke survivors have been conducted in Thailand. Most previous stroke studies have been related to stroke outcome. Consequently, in this follow-up study, we aimed to assess and compare the QoL in early poststroke survivors and to identify predictors of unsatisfactory QoL in each specific dimension of stroke survivors at 1 month and 3 months poststroke. This study provides valuable information for professionals and providers of stroke care in their attempts to improve the QoL of future stroke survivors.

## Methods

This follow-up study was conducted in the stroke units of 4 public hospitals under the auspices of the Department of Medical Services, Bangkok Metropolitan Administration (BMA). Participating patients were already receiving care at one of the study hospitals during the study period and met the following inclusion criteria: (1) aged  $\geq 18$  years with first stroke and stroke event (ie, ischemic or hemorrhagic stroke and subarachnoid hemorrhage); (2) conscious and either able to complete the SF-36v2 questionnaire or to be interviewed in the Thai language; and (3) consenting to participate in this study. Exclusion criteria were (1) stroke from trauma, neoplasm, central nervous system infection, or transient ischemic attack (TIA) or stroke with persistent deficit; (2) underlying psychotic disorder or inability to participate due to illness or cognitive impairment; and (3) inability to be followed up at 3 months' poststroke.

Of the 150 stroke survivors seen at the participating hospitals during the 8-month study period, 137 met the inclusion criteria. Five of these patients refused to participate in the study; thus, 132 patients were either interviewed or completed the self-administered SF-36, version 2.0 (SF-36v2) health survey questionnaire at

1 month poststroke. Two patients had died after 1 month, and 5 patients were lost to follow-up. Therefore, only 125 stroke survivors were able to complete the SF-36v2 questionnaire, including 35 from hospital A and 30 each from hospitals B, C, and D. For stroke survivors who could not complete the SF-36v2 questionnaire, proxy data were collected from family members or close relatives. One hundred and twenty-five individuals who accompanied the patients seeking healthcare at the study hospitals during the study period were included as reference cases. All reference cases with self-reported absence of stroke were matched for age and sex with cases. Those who were unable to fill out the SF-36v2 questionnaire or be interviewed in the Thai language were excluded.

The research protocol was submitted and approved by the Ethics Review Committees of both the BMA and Mahidol University. Written consent was obtained from each participant.

## Measurements

The general characteristics of participants that were assessed included age, sex, marital status, status in family, education level, caregiver, prestroke and poststroke occupation, average monthly income, treatment fee, and effect on work poststroke. Disease characteristics comprised 6 items: length of stay, diagnostics, type of stroke, cause of stroke, lesion location, and coexisting disease.

The Barthel Index (BI) is a well-validated tool consisting of 10 items for the assessment of self-care and mobility skills among stroke patients. Items assessed include personal hygiene, self-bathing, feeding, toilet use, stair-climbing, bowel control, bladder control, and chair transfers and ambulation. Each category of the BI is rated on a scale of 1-5, with 1 indicating an inability to perform the task and 5 indicating full independence in performing the task. Weighted scores are then given to these ratings to give a maximum BI score of 100. Total dependence is defined as a BI score of 0-20; severe dependence, as a BI score of 21-60; moderate dependence, as a BI score of 61-90; mild independence, as a BI score of 91-99; and independence, as a BI score of 100.<sup>19,20</sup>

The Canadian Neurological Scale (CNS) is a well-validated tool designed to monitor neurologic function in conscious stroke survivors. It comprises 11 items, including consciousness level, orientation, aphasia, and motor strength. Each dimension is assigned a score, and total scores range from 0 to 11.5. The CNS is used for alert or drowsy patients. Severe cognitive impairment is defined as a CNS score of 0-5.5; moderate cognitive impairment, as a CNS score of 6.0-8.0; and mild cognitive impairment, as a CNS score of 8.5-11.5.<sup>21</sup>

Social support is composed of 14 items concerning social support from family, friends, and health personnel. Scores range from 0 to 2, with 0 indicating never, 1 indicating sometimes, and 2 indicating always. The possible total scores ranged from 0 to 28. The Cronbach alpha value was 0.83.

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