# Life Satisfaction and Return to Work After Aneurysmal Subarachnoid Hemorrhage

Patricia E. C. A. Passier, MD,*‡ Johanna M. A. Visser-Meily, MD, PhD,* Gabriel J. E. Rinkel, MD,† Eline Lindeman, MD, PhD,*‡ and Marcel W. M. Post, PhD*‡

This study was conducted to investigate life satisfaction and employment status after aneurysmal subarachnoid hemorrhage (SAH) and to explain the associations between life satisfaction and demographic, disease-related, psychological, and personality characteristics. Subjects with SAH (n = 141) living at home 2-4 years after the SAH responded to a mailed questionnaire. Outcomes were life satisfaction, as measured with the Life Satisfaction Questionnaire 9 (LiSat-9), and employment status. Determinants in multiple regression analysis were demographic and SAH characteristics, subjective complaints (eg, mood disorder, fatigue, cognitive complaints), and personality characteristics (eg, neuroticism, passive coping style). Of the 141 subjects, 64 (46.7%) had a Glasgow Outcome Scale score of V (good outcome) at discharge. Mean subject age was 51.4 ± 12.3 years, and mean time after SAH was 36.1 ± 7.9 months. Of the 88 subjects who were working at the time of the SAH, 54 (61.4%) returned to work, but only 31 (35.2%) resumed their work completely. The subjects were least satisfied with their vocational situation (51.9% satisfied) and sexual life (51.7%) and were most satisfied with their relationships (75.2%-88.7%) and self-care ability (88.6%). Age (β value = 0.17), return to work after SAH (0.19), disability at hospital discharge (0.25), worsened mood (−0.37), and passive coping (−0.25) together accounted for 47.2% of the life satisfaction scores. Our data indicate that return to work is a major issue for individuals who survive an SAH. Not returning to work, disability, depression, and passive coping are associated with reduced life satisfaction. Thus, vocational reintegration after SAH merits more attention during rehabilitation. **Key Words:** Intracranial hemorrhage—quality of life—employment—disability—coping—rehabilitation—vocational rehabilitation.


Many individuals who survive an episode of aneurysmal subarachnoid hemorrhage (SAH) experience long-term mood disturbances, personality changes,[1-5] and impaired reintegration into their social situation.[6] Several studies on the quality of life of SAH survivors are available,[2,4,7-9] but these studies report only on health-related quality of life (HRQOL), and there is a difference between the more objective HRQOL and the subjective quality of life or life satisfaction.[10] Whereas HRQOL includes physical, mental, and social aspects of health, life satisfaction concerns a person's feelings regarding functioning and life circumstances.[10] Rehabilitation attempts to secure or restore life satisfaction in persons with chronic disabilities.[11]

Life satisfaction in SAH survivors has been reported in only one previous study, which took only depression and clinical symptomatology into account.[1] In addition, more than one-third of persons who survive SAH are unable to return to their work.[1,5,6,12,13] Research into long-term life

From the *Department of Rehabilitation, Nursing Science, and Sports, †Department of Neurology and Neurosurgery, Rudolf Magnus Institute of Neuroscience, University Medical Center, Utrecht, The Netherlands; and ‡De Hoogstraat Rehabilitation Center, Utrecht, The Netherlands.

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Address correspondence to Patricia E. C. A Passier, MD, Rehabilitation Center De Hoogstraat, PO Box 85238, 3508 AE Utrecht, The Netherlands. E-mail: p.passier@dehoogstraat.nl.

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satisfaction and employment status is important to identify support needs and provide recommendations to improve aftercare. Consequently, we investigated the long-term life satisfaction and employment status of SAH survivors living at home after the episode. We also examined associations among global outcomes, employment status, sociodemographic characteristics, subjective complaints, and personality characteristics related to life satisfaction after SAH.

## Methods

### *Subjects*

The study group comprised individuals who had experienced SAH from a ruptured aneurysm that had been treated by clipping or coiling between January 2003 and July 2005 in the University Medical Center Utrecht (UMCU) and who were living at home at the time of the study. Excluded were individuals with nonaneurysmal SAH, severe comorbidity, or reduced life expectancy, and those who could not speak Dutch. Those who agreed to participate were asked to complete a mailed questionnaire. The UMCU's Medical Ethics Committee approved the study design.

### *Outcome Measurement*

Life satisfaction was measured with the Life Satisfaction questionnaire (LiSat-9), a validated tool for evaluating life satisfaction.[14-18] The LiSat-9 includes 1 question about satisfaction with life as a whole and 8 questions regarding satisfaction with the following life domains: self-care ability, leisure time, vocational situation, financial situation, sexual life, partnership relations, family life, and contacts with friends. Each question is scored on a 6-point scale: 1 = very unsatisfied, 2 = unsatisfied, 3 = rather unsatisfied, 4 = rather satisfied, 5 = satisfied, and 6 = very satisfied.

The subjects were also asked questions about their employment status before and after the SAH episode. For a subject who had been working before SAH, the type of job and the total hours worked were recorded. For a subject who had returned to his or her original job after the SAH episode, whether they worked fewer hours or had less responsibility was noted. Employment status was evaluated as a nominal variable comprising 3 categories: having no paid work either before or after SAH, having paid work before but not after SAH, and having paid work both before and after SAH.

### *Possible Determinants*

Data on age, sex, time after SAH, location of the ruptured aneurysm, and clinical condition on admission (World Federation of Neurological Surgeons (WFNS) scale),[19] data on complications and level of disability at discharge, (the Glasgow Outcome Scale (GOS)),[20] were obtained from the SAH database of UMCU's Department of Neurology and Neurosurgery. All other measurements were obtained through the questionnaire. Mood was evaluated using the Hospital Anxiety and Depression Scale (HADS), which contains 14 items assessing anxiety and depression with a total score of 0-42, with a higher score indicating lower mood.[21] Fatigue was evaluated using the Fatigue Severity Score (FSS),[22] which comprises 9 statements regarding the impact of fatigue. The total FSS score is the mean of the 9 item scores and ranges from 1 to 7, with a higher score indicating greater fatigue. Cognition was assessed using the Cognitive Failure Questionnaire (CFQ),[23] which comprises 25 items measuring the frequency of self-reported failures of memory, attention, motor function, and perception. The CFQ has a maximum score of 100, with higher scores indicating poorer perceived cognitive function. Passive coping strategy was measured using the 7-item passive coping subscale of the Utrecht Coping List (UCL-P),[24] with higher scores indicating greater use of passive coping styles. The neuroticism subscale of the Eysenck Personality Questionnaire (EPQ-N)[25] contains 12 items with "yes/no" answers, with each "yes" answer worth 1 point. Persons with a high score tend to be quickly worried and mentally unstable.

### *Statistical Analysis*

Descriptive statistics were used to describe the SAH population and their work situation and life satisfaction. LiSat-9 item scores were dichotomized as dissatisfied (1-4, "very dissatisfied" to "rather satisfied") or satisfied (5, "satisfied," or 6, "very satisfied").[26] A total LiSat-9 score was computed as the average of all item scores, and thus also had a range of 1–6.[14,17,18] This total score satisfied the normal distribution (skewness, −0.8) and demonstrated good internal consistency and reliability in the present study (Cronbach's $\alpha = 0.87$). Relative risk with corresponding 95% confidence interval (CI) was used to compare life satisfaction in subjects with disability at discharge (GOS < V) and those without disability at discharge (GOS of V) and in subjects who returned to work and those who did not return to work. Bivariate associations of demographic characteristics (eg, age, sex, education, work before and after SAH), SAH-related factors (eg, GOS and complications), subjective complaints (as assessed by the FSS, HADS, and CFQ) and personality characteristics (as assessed by the EPQ-N and UCL-P) with the LiSat-9 total score were tested using Spearman correlations. Variables that were significantly associated with the LiSat-9 total score using an $\alpha$ value of 0.10 were entered as independent variables in a backward multiple regression analysis. The very high correlation between HADS and EPQ-N scores precluded using both of these variables in the same regression analysis; thus, only the HADS was used. Employment status was defined by 2 dummy variables (paid work before and