Life satisfaction after stroke and the association with upper extremity disability, sociodemographics, and participation

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Abstract
Introduction: Remaining disability after stroke can reduce a person's life satisfaction. Because previous studies of life satisfaction show inconsistent results, there is a need for more knowledge regarding perceived life satisfaction after stroke and associated factors.
Objective: To assess perceived life satisfaction after stroke in relation to Swedish reference values; and the association with upper extremity disability, sociodemographics, and participation.
Design: Cross-sectional study.
Setting: University hospital.
Participants: Seventy-five persons (72% male) with mild to moderate disability in a stable phase after stroke.
Interventions: Not applicable.
Main Outcome Measure: Life satisfaction was assessed with the Life Satisfaction Questionnaire (LiSat-11), which includes one global item Life as a whole and 10 domain-specific items. Global life satisfaction and explanatory factors were evaluated in two multivariate logistic regression models.
Results: Fifty-three percent of the participants were satisfied with Life as a whole. Highest satisfaction was found for Family life (78%) and Partner relationship (77%) and lowest satisfaction for Vocational situation (32%), Sexual life (25%), and Physical health (23%). Life as a whole and most domain-specific items showed a significantly lower proportion of satisfied persons compared to Swedish reference values. In the first regression model with factors of upper extremity disability, manual ability was the strongest explanatory variable for Life as a whole (p value = .032, Nagelkerke R Square 0.117). In the second regression model, participation, social, and working status were the final explanatory variables (p value = .006, Nagelkerke R Square = 0.207).
Conclusion: Our findings indicate that persons with mild to moderate disability after stroke perceive overall less satisfaction with Life as a whole and domain-specific items than the general Swedish population. To increase a person's life satisfaction after stroke, rehabilitation interventions should target a variety of aspects including enhancing functioning of upper extremity, reducing participation restrictions, and providing support regarding social and vocational situation.

INTRODUCTION

Stroke is globally a major cause of disability in adults and often leads to a variety of symptoms such as muscle weakness, sensory deficits, spasticity, balance problems, reduced dexterity, communication difficulties, and cognitive impairments.1,2 It has been shown that ~40% of stroke survivors have remaining impairments...
of the upper extremity (UE), which could lead to activity limitations and may negatively affect the individuals’ perceived participation and life satisfaction. To improve functioning and increase a person’s life satisfaction are therefore important goals in stroke rehabilitation.

Perceived life satisfaction is related to concepts such as happiness and well-being and can be assessed as how an individual perceives his or her life situation in various domains. The level of life satisfaction is also affected by the individual’s expectations and thereby reflects how well aspirations and achievements are being met. One commonly used self-reported outcome measure to assess life satisfaction is the Life Satisfaction Questionnaire (LiSat-11), developed by Fugl-Meyer et al. The questionnaire includes one global item, Life as a whole, and 10 domain-specific items concerning provision, leisure, close relations, and health. The LiSat-11 has been validated and reference values for 2533 Swedish individuals, ages 18 to 65, years are available. In the reference population, 70% were satisfied with Life as a whole and 72% to 95% were satisfied with items of health. However, fewer, 39% to 54%, were satisfied with items of provision.

The LiSat-11 is commonly used to rate life satisfaction after stroke, either by using the entire instrument or by using only the global item Life as a whole. The proportion of persons satisfied with Life as a whole varies considerably in studies; from 39% to 78%, and large variations have also been found in domain-specific areas regarding provision (14% to 61%), leisure (34% to 78%), and close relations (43% to 86%). Furthermore, studies have shown that various factors are associated with life satisfaction after stroke. Less dependency in basic activities of daily living and higher levels of social activity and perceived participation are associated with higher satisfaction with life in persons with mild to severe stroke.

On the other hand, cognitive and emotional impairments have been shown to be associated with reduced life satisfaction in persons with mild stroke. Concentration difficulties could have a negative impact on Life as a whole in younger adults and in both genders, whereas not working and not having a significant other could have a more negative effect on men than women. Thus research about life satisfaction after stroke show inconsistent results regarding the percentage satisfied persons in different domains. In addition, a variety of disability-related factors, perceived participation, and sociodemographics may potentially affect life satisfaction after stroke, but more studies are needed.

Furthermore, even though it is well known that functioning of the UE is important for managing daily life, there is limited knowledge on how UE disability is associated with perceived life satisfaction after stroke. One study reported that Life as a whole was significantly but weakly correlated with self-reported ability to perform daily hand activities (ie, manual ability) but not to UE motor function and shoulder pain. In a previous study we have shown that dexterity and perceived participation were important for the ability to perform daily activities. Here, we have expanded the analysis and investigated how UE disability as well as sociodemographics and participation are associated with life satisfaction in persons with mild to moderate disability after stroke. An increased knowledge about life satisfaction and associated factors will assist clinicians to plan and develop targeted rehabilitation interventions. Thus the aim of this study was to assess perceived life satisfaction after stroke in relation to Swedish reference values; and the association with UE disability, sociodemographics, and participation.

MATERIAL AND METHODS

Study design

The data collection was part of a larger project on functioning and disability after stroke and on psychometric properties of various outcome measures, following the International Classification of Functioning, Disability and Health (ICF). In this cross-sectional study, only perceived life satisfaction and associated factors are presented.

Participants

The cohort included persons with stroke (ischemic or hemorrhagic), living in urban and rural areas in the southern part of Sweden, and admitted to a stroke unit at a University Hospital between April 2012 and August 2015. The participants were at least 4 months post-stroke, had mild to moderate disability according to the modified Rankin Scale, mRS, (level 1 to 3), had preserved ability to bring the more affected hand to their forehead, and could grasp, release, and move a small object (2.5 cm cube). Before potential participants were included in the study, they were interviewed about their life situation and level of disability. Persons who were unable to understand and follow test instructions due to communication or cognitive impairments were not included. In addition, those with other disorders or diseases that could affect the more affected UE were excluded.

Prior to inclusion, information about the study was provided and the individuals gave written informed consent to participate. The principles of the Declaration of Helsinki were followed and the study was approved by the Regional Ethical Review Board, Lund, Sweden (Dnr 2012/591).
Outcome measures

Life Satisfaction was rated by the Life Satisfaction Questionnaire (or LiSat-11), which consists of the global item Life as a whole and 10 domain-specific items (see Table 2). The items are rated according to six response options (score 1 to 6): very dissatisfying; dissatisfying; rather dissatisfying; rather satisfying; satisfying; and very satisfying. Higher scores indicate a greater level of perceived satisfaction. The response options can be dichotomized as (i) dissatisfied (score 1 to 4) or (ii) satisfied (score 5 and 6). LiSat-11 has been shown to be reliable in persons with mild to moderate stroke, and Life as a whole is significantly associated with the domain-specific items.

Spasticity was assessed by the response to resistance to passive movement according to the Modified Ashworth Scale (MAS). The score of MAS ranges from 0 (no increase in muscle tone) to 5 (affected part rigid in flexion or extension). The participants’ spasticity was assessed in the elbow flexors in an upright sitting position. The MAS has been shown to have high intra-rater reliability for the elbow in persons with stroke.

Pain was assessed as 0 (not present) or 1 (present) by asking if the participants perceived daily or almost daily pain in their more affected UE.

Grip strength was measured with the digital dynamometer Grippit (Catell AB, Hägersten, Sweden, www.catell.se) according to a standardized test protocol that is reliable for persons with mild to moderate impairments of the UE after stroke. Grip strength has also been found to be a representative measure of the entire UE muscle strength after stroke.

Sensory function was assessed with the Shape/Texture Identification test (STI-test) (Össur Nordic AB, Uppsala, Sweden, www.ossur.se). Identification of three shapes (cube, cylinder, or hexagon) and three textures (one, two, or three raised metal dots placed in a row) in three difficulty levels (decreasing sizes) were made according to standardized test instructions. The score of the STI-test ranges from 0 to 6 points and a higher score indicates better sensation. The STI-test has been shown to be reliable for persons with mild to moderate impairments of the UE after stroke.

Dexterity was assessed with the mini Sollerman Hand Function test (mSHFT) (Catell AB, Hägersten, Sweden, www.catell.se). The mSHFT is a short version of the original Sollerman Hand Function Test and includes the three items (picking up coins; putting nuts on bolts; and buttoning buttons) most strongly correlated with the total score. The ability to grasp the object correctly, the time to complete the item, and the quality of the movements are assessed on a 5-point scale (0 to 4 points) and the total sum score ranges between 0 and 12 points for each hand (where 12 approximates normal dexterity). mSHFT is valid and reliable for persons with mild to moderate impairments of the UE after stroke.

Perceived ability to perform daily hand activities (manual ability) was rated with the ABILHAND Questionnaire (Stroke version). The ABILHAND consists of 23 common bimanual activities, for example, taking the cap off a bottle, cutting meat, and peeling potatoes. Each activity is rated on a three-level scale as impossible (0 point), difficult (1 point), or easy (2 points). Items not attempted within the last 3 months are set as not applicable. The ABILHAND is developed using the Rasch measurement model, which provides data to be converted from ordinal raw scores into a linear measure. Logit scores were obtained by entering the raw scores into an online data analysis module (www.rehab-scales.org). The Swedish version of the ABILHAND was used, which has been found to be reliable in mild to moderate stroke.

Perceived participation was rated by the participation domain of the Stroke Impact Scale 3.0 (SIS Participation). The SIS Participation has eight items (impact of stroke on work; social activities; quiet recreations; active recreations; role as a family member; religious activities; life control and ability to help others), which are scored from 1 (limited all of the time) to 5 (limited none of the time). The composite score is percentage value from 0% to 100%, where a higher percentage indicates higher perceived participation. SIS Participation is valid and reliable in persons with stroke.

Assessments

During an interview the participants rated perceived life satisfaction (LiSat-11), perceived manual ability (ABILHAND), perceived participation (SIS Participation), and perceived pain in the more affected UE. Spasticity (MAS), grip strength (Grippit), sensory function (STI-test), and dexterity (mSHFT) were assessed.

Prior to the assessments the individuals were asked about their age, handedness, social situation (if they lived alone or together with a partner), working situation (paid work at least 20 hours per week or not), and their walking ability. In addition, the level of global disability according to mRS was rated. Data on time of stroke onset, type of stroke (ischemic or hemorrhagic), and side of paresis were obtained from the medical records.

Statistics

Descriptive statistics, such as means and standard deviations (SDs), frequencies, and median and interquartile range (IQR) values, were calculated for the participants’ demographics and clinical characteristics, for
LiSat-11, for measures of UE disability, and for the other potential factors (see below). The proportion of participants satisfied (LiSat score 5 or 6) was presented for each item of LiSat-11 and compared to the proportion of satisfied persons in the Swedish reference sample by means of the One Sample Proportion Test.

For the multivariate logistic regression analyses, Life as a whole (item 1 in LiSat-11) was used as a global measure of perceived life satisfaction (dependent variable). Data were dichotomized as “dissatisfied” or “satisfied,” and potentially explanatory factors were added in the models. Because the sample included 75 persons, only seven variables could be entered in one logistic regression model. Therefore, two models were built: one with factors of UE disability and a second with factors of sociodemographics and participation.

In the first model, the following factors of UE disability were entered: spasticity (MAS score), UE pain (not present/present), grip strength (Grippit Nm), sensory function (STI-test sum score), dexterity (mini Sollerman test sum score), and manual ability (ABILHAND logit score). In the second model, sociodemographics and participation were entered, that is, gender, age, social situation (living alone/living together), working situation (not working/working), and SIS Participation score.

The multivariate regression building was made with a generous inclusion criterion (p ≤ .20) so that no potential variable was excluded in the early stages. First, the associations with Life as a whole were evaluated for one factor at the time. Second, the variable with the lowest p value (if ≤ .20) was included in the model building and thereafter the other factors were added, one at a time. The model of two factors with the highest Nagelkerke R Square value was kept and then the remaining factors were again added, one at a time. This procedure was continued as long as the p value of the model was < .05 and that the Nagelkerke R Square value increased.

All statistical analysis was performed with the IBM SPSS Statistics version 27 (IBM Corporation, Armonk, New York, United States). Probability values less than .05 were considered statistically significant.

**RESULTS**

**Participants**

Seventy-five persons were included in the study (Table 1), of which 58 had received an ischemic stroke. The participants (72% male) were on average 66 years of age (SD 8; range 44 to 85) and the mean time from stroke onset was 33 months (SD 26; range 4 to 116). Most of them had slight disability or moderate disability according to the mRS, and all participants were ambulatory (could walk at least 300 m). A total of 28% had spasticity and 43% had pain in the more-affected UE. Grip strength was reduced in the more-affected hand compared to the less-affected hand. A majority of the participants were retired and most lived with a partner.

**Perceived life satisfaction**

The median of Life as a whole was 5 (IQR 4 to 5), and 53% of the participants rated themselves as satisfied (score 5 or 6) (see Table 2). The medians of the domain-specific items of LiSat-11 varied from 3 to 5. The highest satisfaction was found for items of close relations: Family life (78%) and Partner relationship.
A majority of the participants were also satisfied with their Financial situation (67%), Contacts with friends (63%), and their Ability to manage self-care (ADL) (59%). Fewer participants were satisfied with their Leisure situation and Vocational situation (39% and 32%, respectively), and the items with the lowest satisfaction were Sexual life (25%) and Physical health (23%). Life as a whole and six domain-specific items showed a significantly lower proportion of satisfied persons compared to the reference sample (Table 2). For three items, Contact with friends, Family life and Partner relationship, there were no significant differences between the groups. For one item, Financial situation, there was a significantly higher proportion of satisfied persons in our sample compared to the reference group.

Factors associated with perceived life satisfaction

The univariate logistic regression analyses with the global item Life as a whole and potential explanatory factors are presented in Table 3. Sensory function, dexterity, and manual ability were the factors of UE disability that showed p values ≤.2. Multicollinearity (rho >0.6) was found between manual ability and dexterity, and

### TABLE 2

| LiSat-11 item            | Median (IQR) | Satisfied (%) | Reference values (%) | p Value |
|--------------------------|--------------|---------------|----------------------|---------|
| 1. Life as a whole       | 5 (4 to 5)   | 53            | 70                   | .001    |
| 2. Vocational situation  | 4 (3 to 5)   | 32            | 54                   | <.001   |
| 3. Financial situation   | 5 (4 to 6)   | 67            | 39                   | <.001   |
| 4. Leisure situation     | 4 (3 to 5)   | 39            | 57                   | .001    |
| 5. Contact with friends  | 5 (4 to 6)   | 63            | 65                   | .381    |
| 6. Sexual life           | 3 (2 to 5)   | 25            | 56                   | <.001   |
| 7. ADL                    | 5 (4 to 6)   | 59            | 95                   | <.001   |
| 8. Family life           | 5 (5 to 6)   | 78            | 81                   | .335    |
| 9. Partner relationship  | 6 (5 to 6)   | 77            | 82                   | .242    |
| 10. Physical health      | 4 (3 to 4)   | 23            | 72                   | <.001   |
| 11. Mental health        | 4 (4 to 5)   | 48            | 81                   | <.001   |

Note: Item scores range from 1 to 6; satisfied = those who rated 5 or 6. Reference values according to Fugl-Meyer et al. Abbreviations: ADL, activities of daily living; IQR, interquartile range.

### TABLE 3

| Upper extremity disability                                                                 | p Value | Odds ratio (95% CI) | Nagelkerke R Square |
|--------------------------------------------------------------------------------------------|---------|---------------------|---------------------|
| Dominant UE (not affected/affected)                                                        | .926    | 1.044 (0.421 to 2.588) | 0.000               |
| Pain (not present/present)                                                                 | .975    | 0.986 (0.394 to 2.466) | 0.000               |
| Spasticity (MAS score)                                                                     | .875    | 0.955 (0.536 to 1.701) | 0.000               |
| Grip strength (Grippit, Nm)                                                                | .222    | 1.003 (0.998 to 1.007) | 0.027               |
| Sensory function (STI-test score)                                                          | .183    | 1.156 (0.934 to 1.431) | 0.032               |
| Dexterity (mSHFT score)                                                                    | .133    | 1.116 (0.967 to 1.288) | 0.041               |
| Manual ability (ABILHAND logit score)                                                      | .015    | 1.483 (1.081 to 2.034) | 0.117               |

| Sociodemographics and participation                                                       | p Value | Odds ratio (95% CI) | Nagelkerke R Square |
|--------------------------------------------------------------------------------------------|---------|---------------------|---------------------|
| Age                                                                                        | .776    | 0.991 (0.934 to 1.052) | 0.001               |
| Gender                                                                                     | .537    | 0.727 (0.265 to 1.998) | 0.007               |
| Social situation (living alone/living together)                                            | .105    | 2.250 (0.844 to 5.995) | 0.047               |
| Working situation (not working/working)                                                    | .072    | 3.556 (0.812 to 14.176)| 0.064               |
| Participation (SIS Participation %)                                                        | .008    | 1.039 (1.010 to 1.068) | 0.136               |

Note: Life as a whole obtained by LiSat-11 (1 to 4 = dissatisfied; 5 to 6 = satisfied); Nagelkerke R Square value = pseudo R-square value that tells how well the model explains the dependent variable (from 0 to 1).

Abbreviations: ABILHAND logit score (measurement range of approx 7 logits); CI, confidence interval; MAS, modified Ashworth scale (score range 0 to 5); mSHFT, mini Sollerman Hand Function Test (score range 0 to 12); SIS Participation, the Participation domain of the Stroke Impact Scale (score range 0 to 100%); STI-test, Shape/Texture Identification Test (score range 0 to 6); UE, upper extremity.
between sensory function and dexterity. Therefore, dexterity was omitted in the further multivariate regression analysis. In the second logistic regression model, social situation, working situation, and participation were also explanatory variables that had \( p \) values \( \leq 0.2 \) in the univariate analysis.

In the first multiple logistic regression model building, factors of UE disability, manual ability, and sensory function were entered (\( p \) value = .032, Nagelkerke R Square 0.117) (Table 4). Manual ability was the strongest variable, and sensory function added only 0.0003 to the Nagelkerke value. Perceived participation, social situation, and working situation were entered in the second multiple logistic regression model (\( p \) value = .006, Nagelkerke R Square = 0.207) (Table 5). The Nagelkerke value was 0.136 for participation; living with a partner (compared to living alone) added 0.032 to the model and working (compared to not working) added 0.039.

### DISCUSSION

The present study showed that about half of the persons with mild to moderate disability in a stable phase after stroke were satisfied with *Life as a whole*. However, *Life as a whole* and most domain-specific items showed a significantly lower proportion of satisfied persons compared to reference values for Swedish individuals according to Fugl-Meyer et al.\(^\text{10}\) Furthermore, those persons who rated themselves as satisfied with *Life as a whole* generally reported a better manual ability. In addition, fewer participation restrictions, living with a partner, and working increased the odds of being satisfied with *Life as a whole*.

### Perceived life satisfaction

A majority (53\%) of the participants were satisfied with *Life as a whole*. This is lower than in the Swedish reference sample, where 70\% were satisfied,\(^\text{10}\) but in line with a previous Swedish study in persons with mild to moderate stroke,\(^\text{12}\) where 54\% were satisfied with *Life as a whole* 1 year after stroke. Other studies have shown varying results of levels of global life satisfaction. In an Israeli study,\(^\text{15}\) only 39\% of the participants with mild to severe disability 1 year after stroke were satisfied with *Life as a whole*. In two previous Swedish studies, 12 months after mild stroke,\(^\text{16}\) and 8 to 36 months after stroke in young persons,\(^\text{14}\) 45\% to 48\% were satisfied with *Life as a whole*. However, another Swedish study\(^\text{11}\) reported a higher proportion (60\%) of satisfied persons with mostly mild disability 1 year after stroke. They found that satisfaction increased over time, to 78\% for those living with a partner 6 years after stroke. In a Dutch study\(^\text{13}\) including persons with mild to severe stroke, up to 68\% of the persons were satisfied with *Life as a whole* 3 years after the stroke onset. The differences in perceived life satisfaction after stroke may be due to several factors, such as degree of disability, access to rehabilitation, family situation, and social support.\(^\text{40}\) In addition, an adaptation to the life situation following stroke may lead to higher ratings of life satisfaction over time.\(^\text{41}\)
However, our findings as well as previous studies indicate that persons with stroke generally perceive a lower level of global life satisfaction than in the general population (ie, the Swedish reference sample), which deserves attention by rehabilitation professionals.

In the present study, items related to close relations, such as Family life and Partner relationship, showed the highest proportion of persons who were satisfied (78% and 77%, respectively), which is in line with previous studies in stroke. Of interest, many of our participants (67%) were satisfied with their Financial situation, which is higher compared to the Swedish reference sample (39%). Possible reasons could be that our participants were older and retired and might therefore have adapted life to their economic situation before the stroke, and that most of them probably had no burden of supporting a family anymore.

Low levels of perceived life satisfaction in the present study were found in the domains Physical health and Sexual life, in accordance with previous studies. Thus it seems that the perception of body health was negatively affected after stroke, which may also have affected body image and the participants’ low satisfaction with their sexual life. Furthermore, even if a majority of the participants had only a minor disability and were ambulatory, 41% were not satisfied with their Ability to manage self-care (ADL). This is a low proportion relative to the Swedish reference sample, where 95% was satisfied with this item, but in line with the study by Eriksson et al in persons with mild to moderate stroke, where as many as 45% were dissatisfied with ADL. Moreover, in the domains Leisure situation and Vocational situation, many of our participants (61% and 68%, respectively) were not satisfied, which is also in line with the study of Eriksson et al (59% and 69% dissatisfied, respectively). Because some of these aspects may be improved with various rehabilitation interventions, greater attention ought to be given to increase satisfaction in these domains after stroke.

Factors associated with perceived life satisfaction

Manual ability (ABILHAND logit score) was the strongest explanatory factor in the first regression model including variables of UE disability. Thus those who reported a higher logit score generally perceived themselves as satisfied with Life as a whole. The explanatory value (Nagelkerke R Square) was relatively low, however, indicating that Life as a whole may be too general a measure to capture the specific impact of UE disability. Nevertheless, the results of the present study still suggest that it is important to improve manual ability in rehabilitation in order to improve global life satisfaction after stroke.

Furthermore, the second regression model showed that fewer restrictions in perceived participation, living with a partner, and working increased the odds of being satisfied with Life as a whole. Participation and social situation have previously been shown to be associated with Life as a whole in logistic regression analyses. In studies of linear regression analyses, participation has been found to explain an additional 5% to 9%, and social situation 4% of the variance of the sum score of LiSat in models with demographics, ADL, cognitive function, and depression. Röding et al found that not working and living without a partner were associated with dissatisfaction with Life as a whole for men but not for women. Thus the findings are partly in agreement with our study, even though we did not analyze any specific gender differences. The Nagelkerke R Square value was relatively low also in this second analysis, but the result still indicates that participation as well as the social situation and the vocational situation are factors related to global life satisfaction and should be considered in rehabilitation after stroke.

Clinical implications

This study has several important clinical implications. Because persons with mild to moderate disability in a stable phase after stroke report lower levels of life satisfaction than individuals in a Swedish reference sample, more attention ought to be given to increasing life satisfaction in rehabilitation. In addition, various factors seem to influence a person’s life satisfaction following stroke; therefore this underscores the importance of providing persons after stroke with recurrent multidisciplinary rehabilitation, both in the short- and long term. There is evidence that task-specific, intensive training can improve functioning of the UE in chronic phases after stroke, and the association between manual ability and life satisfaction suggests that such interventions may improve life satisfaction. However, rehabilitation interventions should also target a person’s perceived participation and provide support regarding the social and vocational situation. Nevertheless, the strength of the relations in the explanatory models in the present study show that life satisfaction could be affected by many other factors. This means that rehabilitation planning and interventions related to life satisfaction should be targeted to the individual’s needs and adapted to changing needs over time.

Strengths and limitations

The present study has some limitations that should be regarded when interpreting the results. The sample size was considered sufficiently large to evaluate how various factors are associated with life satisfaction after stroke. However, because some of the associations in the analyses were weak, a larger study sample would have been warranted. Furthermore, it cannot be
excluded that other factors may be of importance for life satisfaction such as cognitive and emotional functions, health care support, educational level, cultural background, and socioeconomic status. In addition, only persons with mild to moderate disability after stroke were included in the present study, and more men agreed to participate. Therefore, the results cannot be generalized to the entire stroke population. However, a strength of the present study was that the participants were recruited from a population living both in urban and rural areas. Care was taken to standardize the test situation; one examiner performed all assessments and valid and reliable stroke-specific outcome measures were used.

**Conclusion**

The findings of this study indicate that persons with mild to moderate disability after stroke perceive overall less satisfaction with *Life as a whole* and domain-specific items than the general Swedish population. To increase a person’s life satisfaction after stroke, rehabilitation interventions should target a variety of aspects including enhancing the function of the UE, reducing participation restrictions, and providing support regarding social and vocational situation.

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**DISCLOSURES**

The authors report no conflict of interest.

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CME Question
This cross-sectional study from a University Hospital in Sweden found that participants with mild to moderate disability after a stroke

a. were mostly satisfied with life as a whole.

b. had similar rates of satisfaction with life as a whole, compared to the general population.

c. had a significantly lower proportion satisfied with family life and partner relationships compared to the reference group.

d. were least satisfied with their ability to manage self-care.

Answer online at https://onlinelearning.aapmr.org/

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