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The Rehabilitation Activities Profile: A Validation Study of Its Use as a Disability Index With Stroke Patients

Coen A. M. van Bennekom, MD, Frank Jelles, MSc, PT, Gustaaf J. Lankhorst, PhD, MD, Lex M. Bouter, PhD

ABSTRACT. van Bennekom CAM, Jelles F, Lankhorst GJ, Bouter LM. The Rehabilitation Activities Profile: a validation study of its use as a disability index with stroke patients. *Arch Phys Med Rehabil* 1995;76:501-7.

• **Objective:** This study evaluates the criterion, content, and construct validity of the Rehabilitation Activities Profile (RAP) in patients with stroke. This instrument is constructed for screening, monitoring, and prognosis purposes to assist clinical rehabilitation. It consists of 21 activities, covering the domains communication, mobility, personal care, occupation, and relationships. Disabilities and perceived problems are assessed in parallel on two four-point severity scales. The disability sum scores of the first four RAP domains were used in the analyses presented in this article. **Design:** An inception cohort of stroke patients was studied during 26 weeks. Patients that were still hospitalized on the 14th day after stroke were included. The functional assessments took place 2, 3, 4, 8, 12, and 26 weeks after stroke. **Setting:** The patients were visited at the hospital, at home, nursing home, or rehabilitation center. **Patients:** 125 patients were included in the study. After 26 weeks, 105 patients were still alive; 18 patients had died, and 2 patients were lost to follow-up. **Main Outcome Measures:** The RAP, Barthel Index (BI) and Frenchay Activities Index (FAI). **Results:** The domain "mobility+personal care" correlated highly with the BI score (r : 0.87 to 0.90). The domain "occupation" correlated with the FAI score before the stroke and 26 weeks after stroke (r : 0.72, 0.73, respectively). The disability sum score of the domain "mobility+personal care" allowed a prediction of the living arrangement 26 weeks after stroke (receiver operator characteristic area surface: 0.90). The same domain showed significant differences ($p < 0.05$) in the 8-week disability sum score for most living arrangements. Exceptions were rehabilitation center versus intermediate care in a nursing home ($p = 0.23$) and acute care hospital versus chronic care in a nursing home ($p = 0.45$). Hypotheses on subgroup differences in mean scores in the domains "communication" and "mobility+personal care" could be confirmed (the discerned subgroups were: gender, having a partner, motor deficit of upper or lower extremity, urinary incontinence, higher cortical deficits, conjugate deviation of the eye, coma, hemianopsia). **Conclusion:** The disability sum scores of the RAP can be used as discriminative, evaluative, and predictive indexes.

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Rehabilitation medicine focuses on the consequences of disease rather than on the disease itself.^{1,2} Therefore, disability and handicap assessment are key elements in the process of rehabilitation. This holds true for the selection of patients for rehabilitation (admission to rehabilitation programs), for monitoring progress during rehabilitation, as well as for establishing a functional prognosis (eg, discharge planning).³ The breadth and complexity of the field demands methods to organize the great amount of potentially relevant information.⁴⁻⁶ Based on clinical and research experience,^{7,8} it is believed that a clinical assessment method in rehabilitation should (1) focus on disabilities and handicaps; (2) be concise and comprehensive; (3) address not only objective disabilities but also perceived problems of the rehabilitee; (4) be suitable for screening, monitoring, and establishing prognosis; and (5) be helpful in defining rehabilitation goals.

From the Department of Rehabilitation Medicine (Drs. van Bennekom, Lankhorst, Mr. Jelles), Free University Hospital; and Faculty of Medicine, Department of Epidemiology and Biostatistics (Dr. Bouter), Vrije Universiteit, Amsterdam, the Netherlands.

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Reprint requests to Coen A.M. van Bennekom, MD, Department of Rehabilitation Medicine, Free University Hospital, PO Box 7057, 1007 MB Amsterdam, The Netherlands.

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To what extent are these specifications met by instruments already available, such as the Katz Index,⁹ the Barthel Index,¹⁰ and the Functional Independence Measure?¹¹ These instruments are primarily intended for inpatients and do not include mobility outdoors, occupation, and relationships. More comprehensive instruments like the Patient Evaluation Conference System¹² provide a detailed inventory of patient characteristics, not only concerning disabilities and handicaps, but also about impairments, medication, and nutrition. This leads to an extensive, discipline-based enumeration of patient characteristics. None of the methods mentioned includes the patient's opinion as expressed in the perceived problems.

Because none of the existing instruments meets our specifications, the authors decided to construct a novel assessment method. The method is based on the International Classification of Impairments, Disabilities, and Handicaps¹ and called the Rehabilitation Activities Profile (RAP).² (A copy of the RAP and its manual is available on request from the first author.)

To be of use in the rehabilitation process, the RAP should serve several purposes, such as disability screening, monitoring progress, and making prognosis. This puts a high demand on its validity. The most frequently used types of validity are criterion, content, and construct validity.¹³⁻¹⁵

This validation study concerns the disabilities in the RAP domains "communication," "mobility," "personal care," and "occupation." The different types of validity are studied in a series of stroke patients. Many authors have noted

that it is not the instrument that is to be validated, but its application for a certain purpose.^{14,16-19} This connection between validity and application will be reviewed in the discussion.

METHODS

Study Population

Patients in this study were those enrolled in a study on the prognosis of stroke. This is a prospective, descriptive study. Consecutive stroke patients of four departments of neurology were involved: hospital 1 (September 1992 to September 1993), hospital 2 (January 1993 to September 1993), hospital 3 (March 1993 to June 1993), and hospital 4 (March 1993 to June 1993). The study was approved by the ethics committees of the four hospitals.

Only those patients were included who were still hospitalized on the 14th day after stroke. No exclusions were made concerning patients with aphasic or cognitive impairments. Patients suffering from a subarachnoidal hemorrhage were excluded. After informed consent was obtained, clinical, sociodemographic and functional status data were collected at 2, 3, 4, 8, 12, and 26 weeks after stroke. The functional status

before stroke was obtained retrospectively. Two interviewers (one for the northern and one for the western part of the Netherlands) collected the data using standardized forms. They were blinded to the hypotheses set forth for the assessment of construct validity.

Instruments

Three measures for functional status were used.

Rehabilitation Activities Profile. The RAP defines 21 activities in five domains: communication, mobility, personal care, occupation, and relationships (table 1).² In the first four domains, each activity is assessed on two aspects: (1) the difficulty in performance and the amount of help needed and (2) the perceived problems concerning the amount of difficulty and help. Two four-point severity scales are used in order to arrive at a disability rating as well as a perceived problem rating for each item. In the domain "relationships" two four-point scales are also used to quantify the following: (1) change in relationships in comparison to before the stroke and (2) the perceived problem concerning the change in relationships. The interrater and intrarater agreement of the method has been tested extensively and proved to be good.²⁰

Table 1: Content of the Rehabilitation Activities Profile (RAP) and Its Concordance With the Barthel Index (BI) and the Frenchay Activities Index (FAI)

RAP Activity	Score*	BI	Score
Communication			
Expressing	0-3		
Comprehending	0-3		
Mobility			
Maintaining posture	0-3	Transfer	0-3
Changing posture	0-3	Walking	0-3
Walking	0-3	Stairs	0-2
Using wheelchair	0-3		
Climbing stairs	0-3		
Using transport	0-3		
Personal care			
Sleeping	0-3	Feeding	0-2
Eating/drinking	0-3	Grooming	0-1
Washing/grooming	0-3	Bathing	0-1
Dressing	0-3	Dressing	0-2
Undressing	0-3	Toilet use	0-2
Maintaining continence	0-3	Bladder	0-2
Occupation		Bowels	0-2
Providing for meals	0-3	FAI	
Household activities	0-3	Preparing meals	0-3
Professional activities	0-3	Washing up	0-3
Leisure activities	0-3	Local shopping	0-3
—	—	Washing clothes	0-3
—	—	Light housework	0-3
—	—	Heavy housework	0-3
—	—	Gainful work	0-3
—	—	Actively pursuing hobby	0-3
Relationships		Travel outings/car rides	0-3
Partner	0-3	Gardening	0-3
Child(ren)	0-3	Reading books	0-3
Friends/acquaintances	0-3	Walking outside > 15 min	0-3
		Driving car/bus travel	0-3
		Household/car maintenance	0-3
		Social occasions	0-3

* Response options for domains of "communication," "mobility," "personal care," and "occupation": performs activity with: no difficulty (0); some difficulty (1); much difficulty/help (2); not (3).

Response options for domain of "relationships": change in activity: none (0); small (1); large (2); very large (3).

Parallel assessed are the perceived problems. Response options for all domains are as follows: no problem (0); small problem (1); large problem (2); very large problem (3).

Table 2: Validity Types, Definitions, and Methods Used in This Study

Validity Type	Definition*	Method
Criterion validity	The extent to which the measurement correlates with an external criterion of the phenomenon under study.	
Concurrent validity	The measurement and criterion refer to the same point in time.	Correlating RAP domain "mobility + personal care" with the BI. Correlating RAP domain "occupation" with the FAI.
Predictive validity	The measurement predicts the criterion at a later point in time.	Using the RAP domain "mobility + personal care" at 2 weeks after stroke to predict two possible outcomes at 26 weeks after stroke: 1) returned home and 2) not returned home (including death).
Content validity	The extent to which the measurement incorporates the domain of the phenomenon under study.	Instrument construction. Internal consistency of disability sum scores.
Construct validity	The extent to which the measurement corresponds to theoretical concepts (constructs) concerning the phenomenon under study.	Discriminative power of RAP domain "mobility + personal care" 8 weeks after stroke between the different living arrangements: (1) acute care hospital; (2) chronic care NH; (3) intermediate care NH; (4) RC; (5) home. Verifying hypotheses on subgroup differences in mean scores of the RAP domains "communication" and "mobility + personal care" concerning: (1) gender; (2) living with or without partner; (3) motor deficit upper extremity; (4) motor deficit lower extremity; (5) side of stroke; (6) urinary incontinence; (7) higher cortical deficits; (8) conjugate eye deviation; (9) coma, (10) hemianopsia.

* According to Last¹⁵.

Abbreviations: NH, nursing home; RC, rehabilitation center.

The RAP represents the collected information by two parallel profiles of the individual scores on all 21 activities. This article focuses on the first aspect (disability) only.

Barthel Index. The Barthel Index (BI) is a frequently used measure of mobility and personal care.¹⁰ The BI consists of 10 activities focusing on the patient's dependency of help. The reliability as well as the validity has been tested extensively.²¹⁻²⁶ The items of the RAP domains "mobility" and "personal care" correspond to a high degree with the BI items (table 1).

Frenchay Activities Index. The Frenchay Activities Index (FAI) measures the so-called instrumental activities of daily living (ADL).²⁷ This concerns complex activities such as hobbies, household, and recreation. The FAI assesses the frequency with which activities are performed. The assessment period for several activities is 6 months. Therefore, part of the FAI can be completed only once in a half-year. The FAI has proved to be reliable and valid.²⁸⁻³⁰ Eleven of the 15 items of the FAI are covered by the domain "occupation" of the RAP (table 1).

Disability Sum Score Construction

The BI and the FAI use a sum score. For the four RAP domains under study, similar sum scores had to be constructed of the first aspect (disability). The disability sum scores were constructed by adding the item disability scores within each domain. Only the items "walking" and "using a wheelchair" were combined using the lowest score on the two items. The item "sleeping" was omitted from the disability sum score calculation of the domain "personal care" because of low, nonsignificant correlations with the other items. To test the internal consistency of these disability sum scores, the Cronbach's alphas were calculated.

Determining Validity

Table 2 presents an overview of the validity types, their definitions, and the methods used in this study.

The concurrent validity was examined by correlating the disability sum scores of the RAP domains "mobility" and "personal care" with the sum score of the BI. The disability sum score of the domain "occupation" was correlated with the sum score of the FAI. To examine the predictive validity, the disability sum scores of the RAP domains "mobility" and "personal care" at 2 weeks after stroke have been used to predict two possible outcomes at 26 weeks after stroke: (1) returned home and (2) not returned home (including death). A Receiver Operator Characteristic (ROC) curve was drawn to describe the accuracy of the model over the disability sum scores range.

Content validity of the RAP was determined by assessing the internal consistency of the RAP domains.

Construct validity was studied by determining the discriminative power of the disability sum score of the RAP domains "mobility" and "personal care" at 8 weeks after stroke, concerning the different living arrangements at that time. A distinction was made between (1) acute care in a hospital; (2) chronic care in a nursing home; (3) intermediate care in a nursing home; (4) rehabilitation center; and (5) home. The total score of the two domains "mobility" and "personal care" represent to some extent the independence of the patient, and thus the living arrangement. It is hypothesized that this disability sum score differs significantly between the different living arrangements.

Another aspect of the construct validity was studied by looking for differences between the disability sum scores of different RAP domains concerning certain parameters. Before examining the data, the following 12 hypotheses were made regarding the scores:

1. Disability sum scores of the RAP domains "mobility + personal care" 2 weeks after stroke will show
 - A. no significant difference between male and female patients;
 - B. no significant difference between patients living with or without a partner;

Table 3: Study Population ($n = 125$)

Denials of patients	
Mean age (SD)	73.1 (10.7)
Gender	
Female	58 (46%)
Male	67 (54%)
Living with partner	
No	54 (43%)
Yes	71 (57%)
Details of stroke	
History	
First stroke	101 (81%)
Recurrence	24 (19%)
Localization	
Right hemisphere	54 (43%)
Left hemisphere	57 (46%)
Brainstem	11 (9%)
Cerebellar	3 (2%)
Type	
Infarction	104 (83%)
Hemorrhage	21 (17%)

- C. a significant difference between patients with and without a motor deficit of the upper extremity;
- D. a significant difference between patients with and without a motor deficit of the lower extremity.
2. *Disability sum scores of the RAP domain "communication" 2 weeks after stroke will show*
 - A. no significant difference between male and female patients;
 - B. no significant difference between patients living with or without a partner;
 - C. a significant difference between right- or left-sided stroke.
3. *Disability sum scores of the RAP domains "mobility + personal care" 26 weeks after stroke will show a significant difference between patients with one of the following signs as opposed to patients without this sign:*
 - A. urinary incontinence in the first week after stroke;
 - B. higher cortical deficits (ie, disoriented in time, place, or person, aphasia, hemineglect, or agnosia) in the first week after stroke;
 - C. conjugate deviation of the eyes in the first week after stroke;
 - D. coma in the first week after stroke (ie, Glasgow Coma Score <7);
 - E. hemianopsia in the first week after stroke.

The signs in the third category of hypotheses concern generally accepted prognostic indicators for the functional recovery.³¹ If these signs are present they usually have a negative effect on the chances of recovery (ie, higher disability scores).

Statistics

The statistics used were Pearson's correlation coefficients and student's t tests. Significance was tested two tailed with $\alpha = 0.05$. In case of multiple t tests, significance levels were adjusted according to the Bonferroni method. Data were analyzed using the SPSS-PC statistical package.³²

RESULTS

One hundred twenty-five patients were enrolled in the study. (See table 3 for population characteristics.)

Of the population who met the inclusion criteria, 3 patients refused to cooperate. Eighteen patients died, and 2 patients were lost to follow-up. Thus, at 26 weeks there were 105 survivors: 58 (55%) lived in their own home; 3 (3%) were living with relatives; 3 (3%) were still in a rehabilitation center; 36 (34%) lived in a nursing home; and 5 (5%) patients lived in a home for the elderly. One patient refused to provide information on functional status 26 weeks after stroke. For 12 patients, it was impossible to retrieve information on the functional status before stroke, either because they died soon after the stroke or because of communication problems and lack of relatives.

Disability Sum Score Construction

The domains "communication," "mobility," and "personal care" have high Cronbach's alphas on all points in time (α ranges from 0.72 to 0.97). Only data from the people living in their own home could be used for the disability sum score evaluation of the domain "occupation." The variance in the rest of the population was zero for three out of the four items, so no Cronbach's alpha could be calculated. Also in this domain a fair amount of internal consistency is present (α ranges from 0.56 to 0.72).

The domains "mobility" and "personal care" are often combined in ADL instruments. In this stroke population, the disability sum scores of these two domains are highly correlated (r ranges from 0.87 to 0.90). The Cronbach's alphas of the combined domains are high (α ranges from 0.86 to 0.97). In the validity analysis, the disability sum scores of the domains "mobility" and "personal care" are added up and expressed as "mobility + personal care."

Criterion Validity

Concurrent validity. The correlations of the disability sum score of the RAP domains "mobility + personal care" and the sum score of the BI are high at all points in time, ranging from 0.85 to 0.94 (table 4).

The correlations of the disability sum score of the RAP domain "occupation" and the sum score of the FAI are shown in table 5. Because three out of the four items of the domain "occupation" are applicable only to patients living in their own home, the data deal with this subpopulation only. Because the FAI can be filled out once in a half-year, validation of the domain "occupation" could occur at two points in time (before stroke and 26 weeks after stroke). On both occasions, a fair correlation was found (0.72 and 0.73, respectively). As shown in table 1, 4 out of 15 FAI items are not covered by items of the RAP domain "occupation." However, omitting these four items from the sum score of the FAI did not increase the correlations in a statistically significant way.

Predictive validity. The predictive validity of the RAP was determined by calculating the sensitivity and specificity of each possible disability sum score of the domains "mobility + personal care" for the outcome at 26 weeks after stroke: returned home or not.

By plotting the percentage true-positive (sensitivity) against the percentage false-positive (1-specificity) of each possible cut off-point, a so-called ROC curve is obtained

Table 4: Mean Disability Sum Scores and Correlations of Disability Sum Score of the RAP Domains "Mobility + Personal Care" and the BI

	<i>n</i>	RAP Score (SD)*	BI Score (SD)	Pearson's <i>r</i> (95% CI)
Before stroke	114	2.1 (3.9)	19.6 (1.6)	-.85 (-.79; -.89)
2 weeks after stroke	125	22.1 (6.9)	7.4 (6.6)	-.94 (-.91; -.96)
3 weeks after stroke	124	20.5 (7.9)	8.9 (7.3)	-.93 (-.90; -.95)
4 weeks after stroke	123	19.3 (8.4)	9.7 (7.4)	-.93 (-.91; -.95)
8 weeks after stroke	115	16.1 (8.9)	12.2 (7.2)	-.94 (-.91; -.96)
12 weeks after stroke	110	14.2 (9.0)	13.7 (6.9)	-.94 (-.90; -.95)
26 weeks after stroke	104	12.1 (8.5)	15.0 (6.4)	-.92 (-.89; -.95)

Abbreviation: CI, confidence interval.

* The lower the RAP score, the better. The opposite is true for the BI score.

(fig). The ROC allows a decision on where the best cut off-point would be for a certain application. The overall accuracy of the model can best be described as the area under the ROC curve. This area theoretically ranges from 0.5 (no accuracy) to 1.0 (perfect accuracy). The ROC area surface in figure 1 amounts to 0.90. The disability sum score 2 weeks after stroke appears to be able to predict the living arrangement after 26 weeks. For instance, if a specificity of around 80% is required, a disability sum score of 23 at 2 weeks after stroke will discern between home or not home 26 weeks after stroke with a sensitivity close to 90%.

Content Validity

Content validity refers to the generalizability of the results and depends on whether the field is represented well by the measurement. According to Cronbach,³³ this is a matter of judgment and not of correlations. The RAP has been constructed in close cooperation with all potential users from different rehabilitation institutes or departments.² Item selection, item reduction, and defining of response options took place in two rounds. This supports the content validity of the instrument.

Nunnally¹⁴ mentions that internal consistency is conditional for a certain degree of content validity: "... the items should tend to measure something in common." As mentioned earlier, the internal consistency was satisfactory in all four RAP domains.

Construct Validity

Discriminative power. The mean disability sum score of the RAP domains "mobility + personal care" 8 weeks after stroke appears to be able to discriminate between most living arrangements (table 6) with the following exceptions: (1) rehabilitation center versus intermediate care in a nursing home and, (2) acute care hospital versus chronic care in a nursing home. Between these groups, no significant differences in disability sum scores were found. The period of 8

weeks after stroke was chosen because by that time a reasonable spread of the study population over the different living arrangements existed.

Hypotheses. All 12 hypotheses could be confirmed (table 7).

DISCUSSION

The authors aimed to construct a multipurpose instrument, usable for screening, monitoring, and prognosis in rehabilitation medicine. This study demonstrates that the properties of the RAP, as operationalized by the disability sum scores, regarding the three classic validity types were found to be good. However, validity is not an entity on its own. An instrument should be validated for a certain purpose, and positive findings may not be relevant for other purposes.

Guyatt and Kirshner^{18,19} note the relevance of the future applications of an instrument for its construction, reliability testing, and validation. They identify three purposes for assessment in health-related fields, each with their own validity

Table 5: Mean Disability Sum Scores and the Correlations of the RAP Domain "Occupations" and the FAI Concerning Patients Living at Home

	<i>n</i>	RAP* Score (SD)	FAI Score (SD)	Pearson's <i>r</i> (95% CI)
Before stroke	112	6.0 (2.7)	25.6 (9.6)	-.72 (-.62; -.80)
26 weeks after stroke	57	7.9 (2.6)	18.8 (10.2)	-.73 (-.57; -.83)

* The lower the RAP score, the better. The opposite is true for the FAI score.

ROC curve of the disability sum scores of the domains "mobility + personal care" 2 weeks after stroke predicting home or not home 26 weeks after stroke.

Table 6: Mean Disability Sum Scores and *p* Values (Student's *t* Test) for the Differences in Mean Disability Sum Scores of the RAP Domains "Mobility + Personal Care" Between Two Living Arrangements Eight Weeks After Stroke

	<i>n</i>	Score (SD)	Chronic Care NH	Intermediate Care NH	Rehab Center	Living in Own Home
Acute care hospital	18	23.4 (6.8)	.4500	.0022*	.0000***	.0000***
Chronic care nursing home	28	24.8 (4.3)	—	.0000***	.0000***	.0000***
Intermediate care nursing home	14	16.3 (5.3)	—	—	.2250	.0000***
Rehabilitation center	15	14.1 (4.2)	—	—	—	.0000***
Living in own home	38	7.6 (4.8)	—	—	—	—
Total	113#					

Abbreviation: NH, nursing home.

* 0.05 (Bonferroni significance levels).

** 0.01.

*** 0.001.

† Two patients were living with their family.

demands: (1) a discriminative index: cross-sectional construct validity (relationship between index and external measures at a single point in time, this concerns cross-sectional differences between persons); (2) a predictive index: criterion validity (agreement with criterion measure); (3) an evaluative index: longitudinal construct validity (relationship between changes in index and external measures over time, this concerns within-subject changes over time).¹⁶

Because screening, prognosis, and monitoring clearly cover all three purposes, it is relevant to examine to what extent the RAP satisfies the related validity demands.

The cross-sectional construct validity, needed for a discriminative index, has been made plausible by performing the following: (1) demonstrating the discriminative power concerning the living arrangement at 8 weeks after stroke; (2) verifying the 12 hypotheses on score differences at 26 weeks after stroke; (3) showing the high correlations with the BI and the FAI. In validation studies, more or less similar instruments are often used as gold standards because nothing better exists. Hence, high correlations support evidence for the concurrent criterion validity. However, when the BI and the FAI are observed as constructs (of ADL and instrumental ADL, respectively) they also lend support to the cross-sectional construct validity. It should be noted that high correlations are to be expected if the instruments compared tend to use the same questions and response options. In this study, this clearly applies to a greater extent regarding the comparison with the BI than regarding that with the FAI. The measures of concurrent and construct validity might be somewhat inflated because for pragmatic reasons the RAP, BI, and FAI ratings had to be performed by the same person at the same occasion.

A predictive index is used as a screening or diagnostic instrument to identify the specific individuals who have or will develop a target condition or outcome.¹⁶ The gold standard, concurrently or prospectively, is not available. This study used being home 26 weeks after stroke or not as prospective criterion measures. As shown in figure 1, the ROC area surface indicates a good amount of sensitivity and specificity in predicting these outcomes by using the disability sum score of the RAP domain "mobility + personal care." Fitting a prediction rule on the total population inflates the predictive accuracy. A more ideal validation of a prediction

Table 7: Mean Disability Sum Scores and *p* Values (Student's *t* Test) of the Different Hypotheses Concerning Subgroup Differences

	<i>n</i>	Score (SD)*	<i>p</i>	Hypothesis
Gender				
Male	67	22.21 (7.0)	.89	1A
Female	58	22.03 (6.9)		
Living				
Alone	54	21.96 (7.0)	.82	1B
Together	71	22.25 (6.8)		
Motor deficit upper extremity				
Yes	112	22.71 (6.4)	.05	1C
No	13	17.07 (9.2)		
Motor deficit lower extremity†				
Yes	102	23.18 (6.1)	.01	1D
No	22	17.50 (8.7)		
	<i>n</i>	Score (SD)‡	<i>p</i>	Hypothesis
Gender				
Male	67	1.50 (1.8)	.40	2A
Female	58	1.79 (2.0)		
Living				
Alone	54	1.37 (1.8)	.14	2B
Together	71	1.87 (1.9)		
Side of stroke				
Right	54	1.04 (1.5)	.00	2C
Left	57	2.42 (2.0)		
	<i>n</i>	Score (SD)§	<i>p</i>	Hypothesis
Urinary incontinence first week after stroke				
Yes	49	17.82 (8.1)	.00	3A
No	55	6.98 (4.9)		
Higher cortical deficits				
Yes	60	14.73 (8.6)	.00	3B
No	44	8.48 (7.1)		
Conjugate deviation				
Yes	23	17.83 (8.2)	.00	3C
No	73	10.05 (7.6)		
Coma				
Yes	9	18.67 (9.5)	.05	3D
No	94	11.46 (8.2)		
Hemianopsia				
Yes	33	15.42 (8.3)	.00	3E
No	64	10.02 (8.1)		

* "Mobility + personal care" disability sum score 2 weeks after stroke.

† One patient had undergone a leg amputation on the hemiplegic side.

‡ "Communication" disability sum score 2 weeks after stroke.

§ "Mobility + personal care" disability sum score 26 weeks after stroke.

rule would have been applying the split-half method: constructing the model on half the subjects and testing its accuracy on the other half. The relatively small number of subjects did not allow this approach. The ROC method does not produce a specific prediction rule but shows the accuracy of all possible cutoff points.

The evaluative index measures the magnitude of longitudinal change. The changes in disability sum scores mentioned in tables 4 and 5 provide evidence for the longitudinal construct validity required for the evaluative index.

Closely correlated with the longitudinal construct validity is the relatively new concept of responsiveness. Guyatt^{18,19} considers responsiveness as an important additional property of an evaluative index and defines it as "the ability to detect change over time." Although this study shows that the RAP scores change over time in this population, further analysis of the responsiveness is necessary to reinforce this claim for the use of the RAP as an evaluative index. This validation study does not confirm or falsify the alleged unique properties of the RAP. This can only be achieved when the RAP is used in real-life rehabilitation questions, such as improving functional prognosis or improving interdisciplinary teamwork. The results of these studies will be reported separately, as well as the added value of the combination of disability rating and perceived problem rating.

CONCLUSION

The intended multipurpose application of the RAP for screening, monitoring, and prognosis purposes brings about the need for high-validity requirements. This study has shown that the properties of the section of the RAP that assesses "difficulty in performance" (as expressed in the disability sum scores) lend support to its use as a discriminative and predictive index. Also evidence has been found for its value as an evaluative index.

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