

Introduction

Clinical trials forming the basis of current guidelines for the management of intracranial aneurysms have relied on patient-reported Modified Rankin Scale values (mRS) to assess patient functional outcome. The effect of patient demographics on perception of disability, and by extension patient-reported mRS, is not well understood.

Methods

A consecutive series of patients with a previously treated or untreated unruptured intracranial aneurysm (UIA) prospectively underwent a structured interview with a trained nurse, at the conclusion of which they were assigned a mRS in accordance with their degree of disability. Information on patient characteristics was also collected during the interview. Agreement between patient- and nurse-reported mRS was assessed using Cohen’s kappa coefficient. The effect of patient demographics on the frequency of greater patient- than nurse-reported mRS was assessed using the Pearson’s Chi-square and Fisher’s Exact tests.

Results

There were 209 patients with an UIA enrolled in the study, 38 of which (18.2%) were previously treated. The majority of patients were female (161/209, 77.0%), and the mean age of our cohort was 60.2 years (SD: 13.7). Agreement between patient- and nurse-reported mRS occurred in 72.7% of cases (95% CI 66.3-78.3), with a kappa coefficient of 0.58 (95% CI 0.49-0.67). Patients younger than 75 years of age were more likely to report a higher mRS than the nurse (19.4% vs 3.4%, p = 0.034). Among female patients, patients without a college degree were more likely to report a higher mRS than the nurse (22.5% vs 9.5%, p = 0.035).

Table 1. Patient Characteristics	
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No. Patients	209
Age (years), Mean (SD)	60.2 (13.7)
Range	(20-88)
Sex, N (%)	
Male	48 (23.0)
Female	161 (77.0)
4-year College Degree	
No	131 (62.7)
Yes	78 (37.3)
Previously Treated	
No	171 (81.8)
Yes	38 (18.2)
Complications from Treatment	
No	37 (97.4)
Yes	1 (2.6)
Previous Subarachnoid Hemorrhage	
No	201 (96.2)
Yes	8 (3.8)
Patient-reported mRS	
0	39 (18.6)
1	93 (44.5)
2	60 (28.7)
3	16 (7.7)
4	1 (0.5)
Nurse-Reported mRS	
0	30 (14.4)
1	112 (53.6)
2	64 (30.6)
3	3 (1.4)

Table 2. Agreement between Patient- and Nurse-reported mRS				
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Variable	Agreement (%)	95% CI	Kappa Coefficient	95% CI
All Patients	72.7	(66.3-78.3)	0.58	(0.49-0.67)
Age <75				
No	73.3	(64.4-79.3)	0.59	(0.49-0.68)
Yes	69.0	(50.8-82.7)	0.50	(0.25-0.76)
Sex				
Male	64.6	(50.4-76.8)	0.42	(0.21-0.63)
Female	75.2	(67.9-81.2)	0.62	(0.52-0.72)
4-year College Degree				
No	70.2	(61.9-77.3)	0.55	(0.44-0.67)
Yes	76.9	(66.4-84.9)	0.62	(0.47-0.77)
Female with 4-year College Degree*				
No	69.4	(59.7-77.6)	0.54	(0.41-0.66)
Yes	84.1	(73.2-91.1)	0.74	(0.59-0.88)
Male with 4-year College Degree*				
No	72.7	(55.8-84.9)	0.55	(0.31-0.79)
Yes	66.7	(24.8-70.0)	0.13	(-0.29-0.56)
Previously Treated				
No	73.1	(64.0-79.2)	0.58	(0.48-0.68)
Yes	71.1	(51.2-83.0)	0.55	(0.35-0.77)
Previous Subarachnoid Hemorrhage				
No	72.1	(63.6-77.9)	0.57	(0.47-0.66)
Yes	87.5	(52.9-97.8)	0.78	(0.42-1.00)

Conclusions

Our results suggest that patient demographics may influence perception of disability. These findings should be considered when employing patient-reported mRS to determine functional outcome.

Table 3. Comparison of Patient- and Nurse-reported mRS			
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Variable	Patient mRS ≤ Nurse mRS	Patient mRS > Nurse mRS	P-value
All Patients, n (%)	173 (82.8)	36 (17.2)	—
Age ≥75			
No	145 (80.6)	35 (19.4)	
Yes	28 (96.6)	1 (3.4)	0.034*
Sex			
Male	40 (83.3)	8 (16.7)	
Female	133 (82.6)	28 (17.4)	0.907
4-year College Degree			
No	105 (80.2)	26 (19.8)	
Yes	68 (87.2)	10 (12.8)	0.193
Female with 4-year College Degree*			
No	76 (77.5)	22 (22.5)	
Yes	57 (90.5)	6 (9.5)	0.035
Male with 4-year College Degree*			
No	29 (87.9)	4 (12.1)	
Yes	11 (73.3)	4 (26.7)	0.236*
Previously Treated			
No	141 (82.5)	30 (17.5)	
Yes	32 (84.2)	6 (15.8)	0.796
Previous Subarachnoid Hemorrhage			
No	165 (82.1)	36 (17.9)	
Yes	8 (100.0)	0 (0.0)	0.356*

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Identify patient characteristics that may influence patient reported modified Rankin Scale values, 2)Describe how different patient characteristics influence patient reported modified Rankin scale values.