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ICF Framework Based Factors Associated with Post-Stroke Social Participation: The Cohort Study

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Introduction

Stroke is a major cause of serious, long-term disability. Annually, 15 million people worldwide experience a stroke. The mortality rate of stroke has declined with time but 5 million people have been left permanently disabled annually and placing a huge burden on family and society. Thus, the recovery after stroke can take months or years, placing special demands on rehabilitation and reintegration into society. The aim of this study was to identify the factors that influence social participation in people with stroke.

Method

This study is the Korean Stroke Cohort for Functioning and Rehabilitation (KOSCO) Study. From August 2012 to May 2015, 8010 out of 16,245 stroke patients who participated in the study at 9 regional hospitals in Korea agreed to participate. The number of patients who met the inclusion criteria was 1722, which was 1722 out of 5306 stroke patients who were followed up at 12 months. Of these, 728 did not contact the hospital, refused follow-up, and were excluded due to missing information. Therefore, data from 994 patients with functionally independent stroke were analyzed. Data was analyzed from November 2022 to December 2022. Social participation was assessed using the Reintegration to Normal Living Index. All other variables including characteristics of the people with stroke and their caregivers at 12 months using the International Classification of Functioning, Disability, and Health as a conceptual framework were assessed. Multivariate regression analysis was performed to analyze factors that potentially influenced social participation 12 months after stroke.

Result

The mean age [standard deviation] of the 994 participants was 59.9 [12.0] years. Most were men (72.9%). The frequency of social participation was higher in people with stroke with functional independence. Multivariate regression analysis showed that religion, alcohol consumption, swallowing function, psychosocial stress, activities of daily living, aerobic exercise, driving not at all before or after stroke, driving done before but not later after stroke, quality of life, housing type, caregiver age, caregiver type (offspring), and caregiver burden had a significant association with social participation 12 months after stroke.

Table 1. Characteristics of persons with stroke according to activities and participation

Independent variables		All (n=994)
Activities and participation		
Disability or dependence (mRS), n (%)		
	No symptoms at all (0)	541 (54.4)
	No significant disability (1)	431 (43.4)
	Slight disability (2)	19 (1.9)
	Moderate disability (3)	3 (0.3)
Activities of daily living (K-MBI), mean ± SD		99.6 ± 2.0
Vigorous-intensity physical activity, n (%)		
	Never	809 (81.4)
	Seldom (1-2 days)	84 (8.5)
	Sometimes (3-5 days)	55 (5.5)
	Very often (6-7 days)	46 (4.6)
Moderate-intensity physical activities, n (%)		
	Never	783 (78.8)
	Seldom (1-2 days per week)	45 (4.5)
	Sometimes (3-5 days per week)	75 (7.5)
	Very often (6-7 days per week)	91 (9.2)
Aerobic exercise, n (%)		
	Never	292 (29.4)
	Seldom (1-2 days per week)	40 (4.0)
	Sometimes (3-5 days per week)	141 (14.2)
	Very often (6-7 days per week)	521 (52.4)
Driving, n (%)		
	Not at all	302 (30.4)
	Not done before but done later	2 (0.2)
	Done before but not later	116 (11.7)
	Consistently done	574 (57.7)
Quality of life (EQ-5D), mean (SD)		0.9 (0.1)
Environmental factors		
Living arrangement, n (%)		
	Living alone	86 (8.7)
	With someone	908 (91.3)
Family support (FSI), mean ± SD		48.5 ± 6.7
Employment status, yes, n (%)		527 (53.0)
Housing type		
	Apartment	497 (50.0)
	Detached housing	360 (36.2)
	Multi-unit housing	110 (11.1)
	Others	27 (2.7)
Elevator use, yes, n (%)		462 (46.5)
Inconvenient structure (entering or leaving home), yes, n (%)		52 (5.2)

SD; Standard Deviation, K-MBI; Korean ersion of the Modified Barthel Index, mRS; modified Rankin Scale, EQ-5D; EuroQol-5 Dimensions; FSI; Family Support Inventory

Table 2. Characteristics of caregivers according to environmental factors

Independent variables		All (n=994)
Age (years), mean (SD)		56.8 (13.2)
Sex, n (%)		
	Male	83 (29.1)
	Female	202 (70.9)
Type of caregiver, n (%)		
	Partner	206(72.3)
	Offspring	58(20.4)
	Daughter in law	10(3.5)
	Parents	3(1.1)
	Others	8(2.8)

SD; Standard Deviation

Table 3. Multivariate regression analysis of independent variables for social participation in persons with stroke and variables of caregivers affecting patients' social participation

Patients	E	SE	t-value	*p*-value
Intercept	-21.19	13.51	- 1.57	.12
Religion	1.47	0.53	2.79	.01*
Alcohol consumption	-1.09	0.45	- 2.43	.02*
ASHA-NOMS	15.86	6.50	2.44	.01*
PWI-SF	-0.12	0.03	- 3.78	< .001*
K-MBI	0.80	0.12	6.66	< .001*
Aerobic exercise	1.97	0.48	4.14	< .001*
Driving not at all	-1.86	0.49	-3.83	< .001*
Driving done before	-1.45	0.67	-2.15	.03*
Driving done later	-1.82	4.56	-0.40	.69
EQ-5D	18.24	4.64	3.93	< .001*
Housing type(Multi-unit)	1.62	0.68	2.38	.02*
Caregivers	**E**	**SE**	**t-value**	***p*-value**
Intercept	112.69	4.30	26.19	< .001*
Age	-0.17	0.06	-2.64	.01*
Caregiver type(Offspring)	-8.45	2.09	-4.04	< .001*
CBI	-0.31	0.07	-4.17	< .001*

E; Estimate, SE; Standard Error, ASHA-NOMS; American Speech Language Hearing Association National Outcomes Measurement System. PWI-SF; Psychosocial Wellbeing Index-Short Form, K-MBI; Korean version of the Modified Barthel Index, EQ-5D; EuroQol-5 Dimensions, CBI; Caregiver Burden Inventory. Asterisk means statistically significance (p<0.05).

Conclusion

Social participation of people with stroke is associated with variables from all International Classification of Functioning, Disability, and Health framework components. These key variables should be taken into consideration when planning rehabilitation for people with stroke.

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