뇌신경재활

게시일시 및 장소 : 10 월 18 일(금) 13:15-18:00 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 15:45-16:30 Room G(3F)

P 2-62

Determinants affecting the Burden of Primary Caregivers who Attend Patients with Stroke in Korea

Minsun Kim[1*], Hyun Haeng Lee[1], Min Kyun Sohn [2], Deog Yung Kim [3], Sam-Gyu Lee [4], Yong-il Shin [5], Gyung-Jae Oh [6], Yang-Soo Lee [7], Min Cheol Joo [8], So Young Lee [9], Junhee Han [10], Jeonghoon Ahn [11], Sung Hyun Kang [12], Ji Yoo Choi[12], Young Taek Kim [12,13], Won Hyuk Chang [14], Yun-Hee Kim[14,15†], Jongmin Lee[1†]

Konkuk University Medical Center and Konkuk University School of Medicine, Seoul, Korea, Department of Rehabilitation Medicine[1], Chungnam National University School of Medicine, Department of Rehabilitation Medicine[2], Yonsei University College of Medicine, Department and Research Institute of Rehabilitation Medicine[3], Chonnam National University Medical School, Department of Physical and Rehabilitation Medicine[4], Pusan National University School of Medicine, Pusan National University Yangsan Hospital, Department of Rehabilitation Medicine[5], Wonkwang University, School of Medicine, Department of Preventive Medicine[6], Kyungpook National University School of Medicine, Kyungpook National University Hospital, Department of Rehabilitation Medicine[7], Wonkwang University School of Medicine, Department of Rehabilitation Medicine[8], Jeju National University Hospital, Jeju National University School of Medicine, Department of Rehabilitation Medicine[9], Hallym University, Department of Statistics and Institute of Statistics[10], Ewha Womans University, Department of Health Convergence[11], Division of Chronic Disease Prevention, Center for Disease, Korea Centers for Disease Control and Prevention[12], Division of Chronic Disease Control, Center for Disease Prevention, Korea Centers for Disease Control and Prevention[13], Heart Vascular Stroke Institute, Samsung Medical Center, Sungkyunkwan University School of Medicine, Department of Physical and Rehabilitation Medicine[14], SAIHST, Sungkyunkwan University, Department of Health Science and Technology, Department of Medical Device Management and Research, Department of Digital Health[15]

Objective

Caring for stroke survivors can cause high levels of emotional and physical stress for caregiver. The purpose of this study was to determine factors affecting the burden of primary caregivers of the patients with first-ever stroke at 3 months in South Korea.

Method

We analyzed Korean Stroke Cohort for Functioning and Rehabilitation (KOSCO) data, which is a multi-center prospective cohort study for investigating the factors related to long-term functional level in stroke patients with 11 hospitals from 9 different regions in South Korea.

Inclusion criteria were as follows: 1) first-ever acute stroke (ischemic stroke or intracerebral hemorrhage) with corresponding lesion and/or evidence of acute arterial occlusion on CT or MRI; 2) age ≥ 19 years at onset of stroke; 3) onset of symptoms within seven days prior to inclusion; 4) home discharge at less than 3 months after stroke onset; and 5) continuous caregiving by ‘one primary caregiver’ at acute care hospital and home. We excluded 1) transient ischemic attack; 2) history of stroke; 3) traumatic intracerebral hemorrhage; 4) foreign patients; and 5) any missing values of explanatory and dependent variables. To compare the patients’ and caregivers’ characteristics between the two groups, Student’s t-test was used. Significance was accepted at p-value < 0.05. We used logistic regression with multiple variables to examine the factors affecting the burden of primary caregiver of stroke patients.

Results

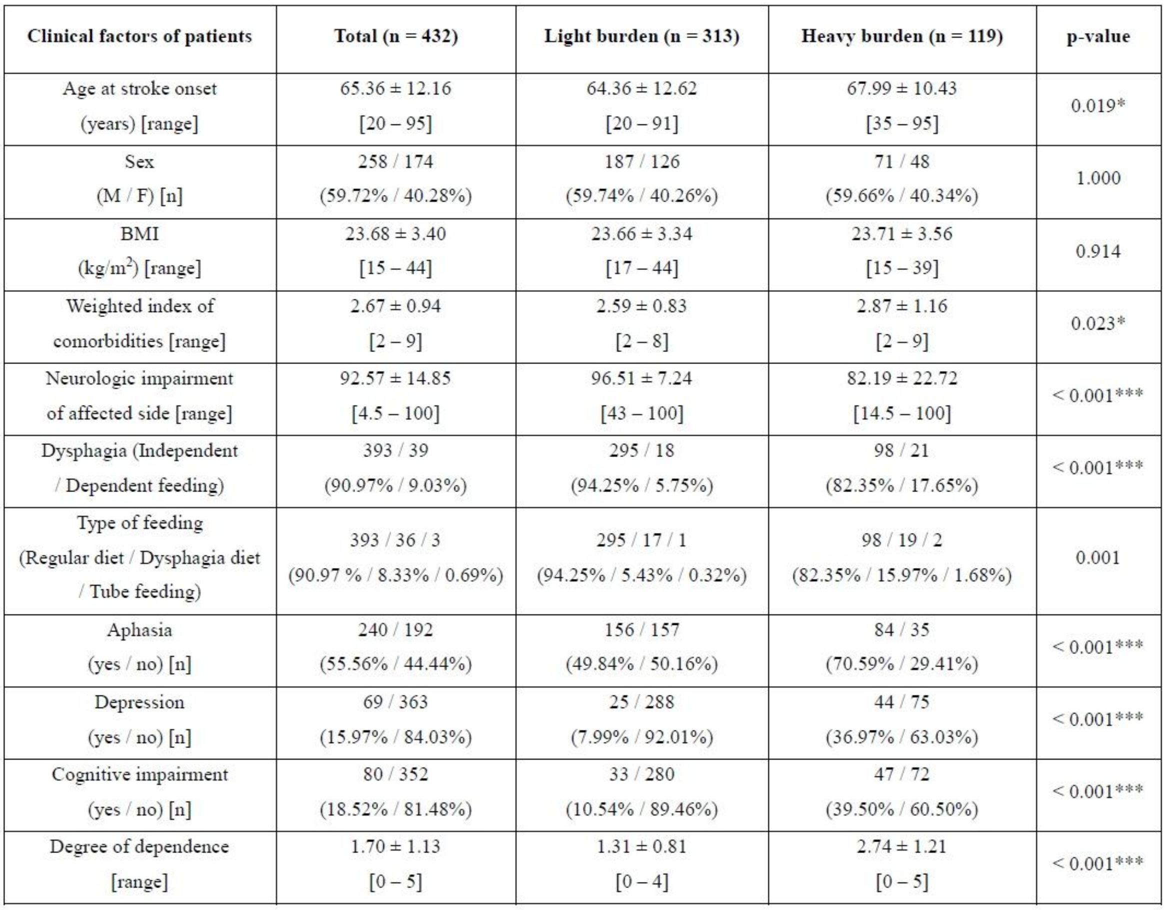
A total of 864 caregivers who attend patients with stroke were interviewed through a questionnaire to assess the level of caregiver burden at 3 months after stroke (Figure 1). According to the sum score (15-75) of questionnaire answers for each item, the bottom 25% were assigned as “light burden group” and the top 25% as “heavy burden group”. Among clinical characteristics of the patient, the variables of age of stroke onset, weighted index of comorbidities, neurologic impairment of affected side, dysphagia, aphasia, depression, cognitive impairment, and degree of dependence were significantly different between the two groups (Table 1). Among the caregivers’ and environmental factors, there was significant difference between the two groups with age, sex, level of intimacy with patient, living with patient, level of education, and type of health insurance (Table 2). Logistic regression model results indicated that age of stroke patient, severity of neurological impairment, depression, dysphagia, and cognitive impairment increased the caregiver burden at 3 months after stroke with significance (Table 3).

Conclusion

This study investigated factors related to patients and caregivers affecting the burden of primary caregivers of the patients at 3 months after stroke in South Korea, and found that age of stroke patient, severity of neurological impairment, depression, dysphagia, and cognitive impairment affected the caregiver burden at 3 months after stroke.

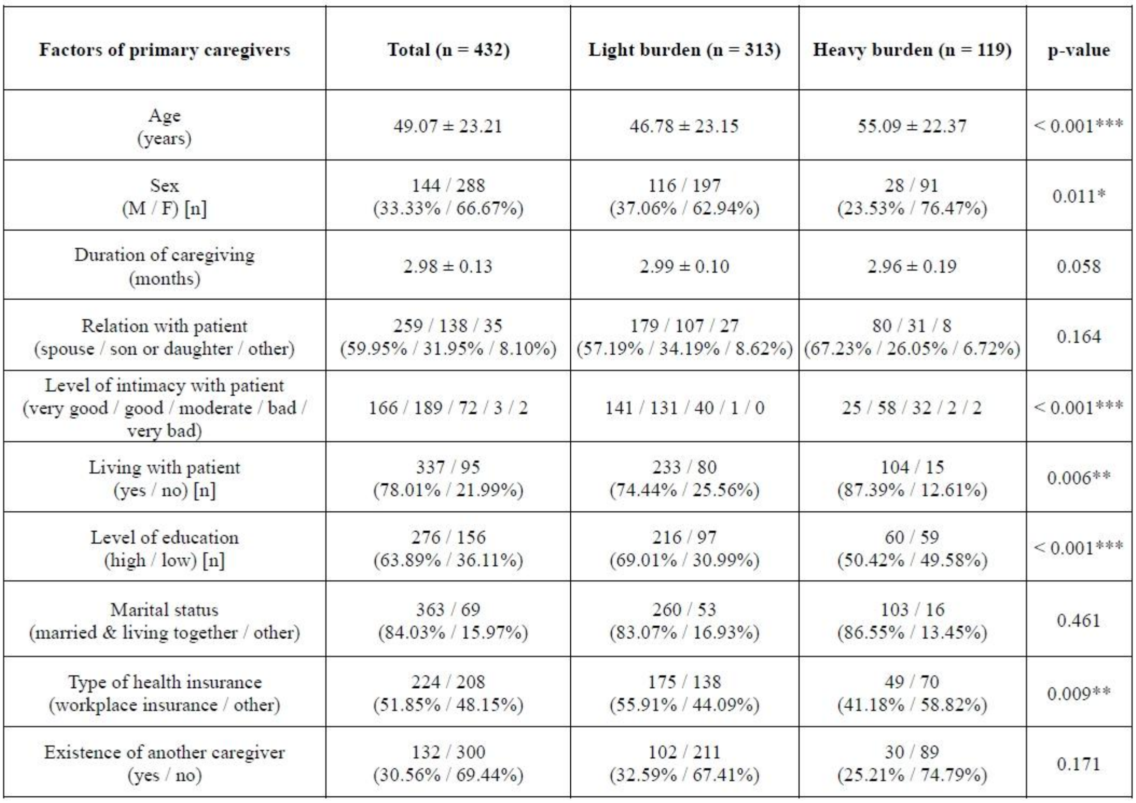
Acknowledgment :This work was supported by the Research Program funded by the Korea Centers for Disease Control and Prevention (2019E320200).

Table 1. Comparison of the clinical factors related patients and the level of caregiver burden at 3 months after stroke



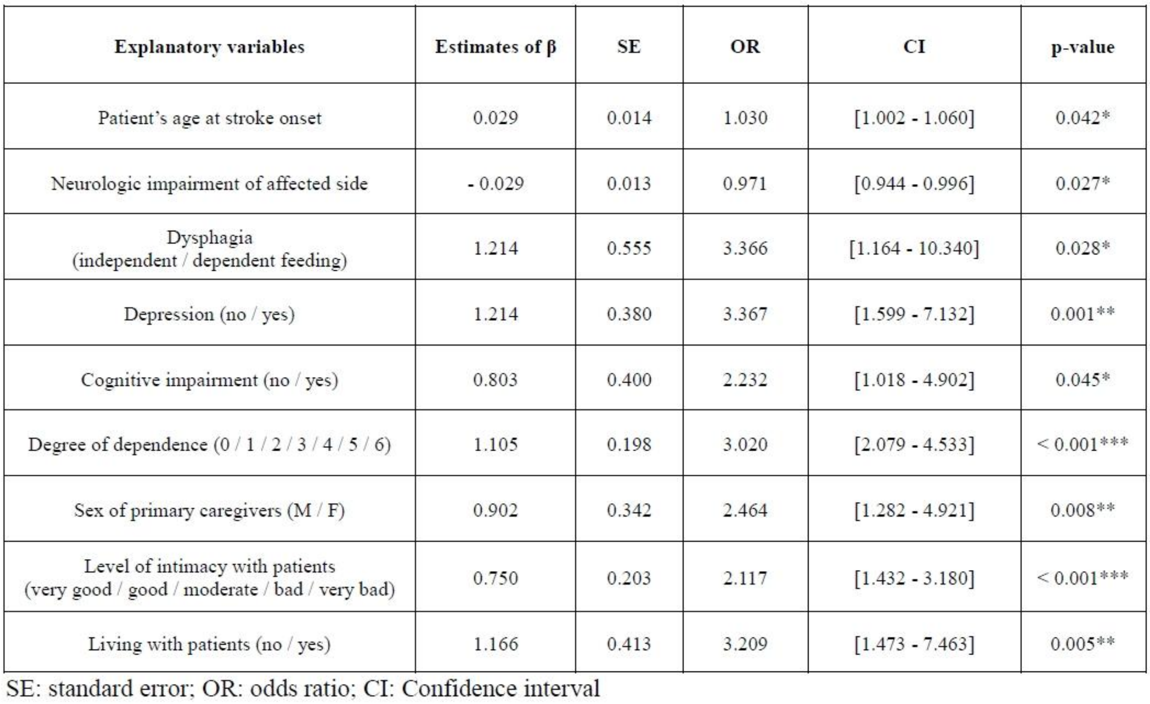
Clinical factors of patients	Total (n = 432)	Light burden (n = 313)	Heavy burden (n = 119)	p-value
Age at stroke onset (years) [range]	65.36 ± 12.16 [20 – 95]	64.36 ± 12.62 [20 – 91]	67.99 ± 10.43 [35 – 95]	0.019*
Sex (M / F) [n]	258 / 174 (59.72% / 40.28%)	187 / 126 (59.74% / 40.26%)	71 / 48 (59.66% / 40.34%)	1.000
BMI (kg/m^2) [range]	23.68 ± 3.40 [15 – 44]	23.66 ± 3.34 [17 – 44]	23.71 ± 3.56 [15 – 39]	0.914
Weighted index of comorbidities [range]	2.67 ± 0.94 [2 – 9]	2.59 ± 0.83 [2 – 8]	2.87 ± 1.16 [2 – 9]	0.023*
Neurologic impairment of affected side [range]	92.57 ± 14.85 [4.5 – 100]	96.51 ± 7.24 [43 – 100]	82.19 ± 22.72 [14.5 – 100]	< 0.001***
Dysphagia (Independent / Dependent feeding)	393 / 39 (90.97% / 9.03%)	295 / 18 (94.25% / 5.75%)	98 / 21 (82.35% / 17.65%)	< 0.001***
Type of feeding (Regular diet / Dysphagia diet / Tube feeding)	393 / 36 / 3 (90.97 % / 8.33% / 0.69%)	295 / 17 / 1 (94.25% / 5.43% / 0.32%)	98 / 19 / 2 (82.35% / 15.97% / 1.68%)	0.001
Aphasia (yes / no) [n]	240 / 192 (55.56% / 44.44%)	156 / 157 (49.84% / 50.16%)	84 / 35 (70.59% / 29.41%)	< 0.001***
Depression (yes / no) [n]	69 / 363 (15.97% / 84.03%)	25 / 288 (7.99% / 92.01%)	44 / 75 (36.97% / 63.03%)	< 0.001***
Cognitive impairment (yes / no) [n]	80 / 352 (18.52% / 81.48%)	33 / 280 (10.54% / 89.46%)	47 / 72 (39.50% / 60.50%)	< 0.001***
Degree of dependence [range]	1.70 ± 1.13 [0 – 5]	1.31 ± 0.81 [0 – 4]	2.74 ± 1.21 [0 – 5]	< 0.001***

Table 2. Comparison of the factors of primary caregiver and the level of caregiver burden at 3 months after stroke.



Factors of primary caregivers	Total (n = 432)	Light burden (n = 313)	Heavy burden (n = 119)	p-value
Age (years)	49.07 ± 23.21	46.78 ± 23.15	55.09 ± 22.37	< 0.001***
Sex (M / F) [n]	144 / 288 (33.33% / 66.67%)	116 / 197 (37.06% / 62.94%)	28 / 91 (23.53% / 76.47%)	0.011*
Duration of caregiving (months)	2.98 ± 0.13	2.99 ± 0.10	2.96 ± 0.19	0.058
Relation with patient (spouse / son or daughter / other)	259 / 138 / 35 (59.95% / 31.95% / 8.10%)	179 / 107 / 27 (57.19% / 34.19% / 8.62%)	80 / 31 / 8 (67.23% / 26.05% / 6.72%)	0.164
Level of intimacy with patient (very good / good / moderate / bad / very bad)	166 / 189 / 72 / 3 / 2	141 / 131 / 40 / 1 / 0	25 / 58 / 32 / 2 / 2	< 0.001***
Living with patient (yes / no) [n]	337 / 95 (78.01% / 21.99%)	233 / 80 (74.44% / 25.56%)	104 / 15 (87.39% / 12.61%)	0.006**
Level of education (high / low) [n]	276 / 156 (63.89% / 36.11%)	216 / 97 (69.01% / 30.99%)	60 / 59 (50.42% / 49.58%)	< 0.001***
Marital status (married & living together / other)	363 / 69 (84.03% / 15.97%)	260 / 53 (83.07% / 16.93%)	103 / 16 (86.55% / 13.45%)	0.461
Type of health insurance (workplace insurance / other)	224 / 208 (51.85% / 48.15%)	175 / 138 (55.91% / 44.09%)	49 / 70 (41.18% / 58.82%)	0.009**
Existence of another caregiver (yes / no)	132 / 300 (30.56% / 69.44%)	102 / 211 (32.59% / 67.41%)	30 / 89 (25.21% / 74.79%)	0.171

Table 3. Multivariate binary logistic regression analysis of the association between caregiver burden and factors of patients and caregiver.



Explanatory variables	Estimates of β	SE	OR	CI	p-value
Patient's age at stroke onset	0.029	0.014	1.030	[1.002 - 1.060]	0.042*
Neurologic impairment of affected side	- 0.029	0.013	0.971	[0.944 - 0.996]	0.027*
Dysphagia (independent / dependent feeding)	1.214	0.555	3.366	[1.164 - 10.340]	0.028*
Depression (no / yes)	1.214	0.380	3.367	[1.599 - 7.132]	0.001**
Cognitive impairment (no / yes)	0.803	0.400	2.232	[1.018 - 4.902]	0.045*
Degree of dependence (0 / 1 / 2 / 3 / 4 / 5 / 6)	1.105	0.198	3.020	[2.079 - 4.533]	< 0.001***
Sex of primary caregivers (M / F)	0.902	0.342	2.464	[1.282 - 4.921]	0.008**
Level of intimacy with patients (very good / good / moderate / bad / very bad)	0.750	0.203	2.117	[1.432 - 3.180]	< 0.001***
Living with patients (no / yes)	1.166	0.413	3.209	[1.473 - 7.463]	0.005**

SE: standard error; OR: odds ratio; CI: Confidence interval