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Oral health related quality of life and it's related factors of stroke patients at home in Korea

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ABSTRACT

Objective: Due to physical impairments of stroke patients oral health tends to deteriorate, which may have an impact on the oral health-related quality of life (OHRQoL). Therefore, the aim of this study was to evaluate the OHRQoL and analyze its related factors among stroke patients cared for at home in Korea.
Methods: OHRQoL of 549 stroke patients aged over 50 who received care at home was assessed by Oral Health Impact Profile-14 (OHIP-14) in a City, Korea, from May to June 2009. Trained researchers and five nurses conducted interviews with patients or caregivers in their homes using structured questionnaires. Demographic, general health, stroke, and oral health related variables were surveyed. Statistically, *t*-test, an analysis of variance (ANOVA), and multiple regression analyses were used to evaluate the relationship between OHRQoL and various covariates.
Results: Mean of total OHIP-14 score was 35.7 ± 10.0. Age, activity of daily living (ADL) ($p < 0.001$), subjective general and oral health status ($p < 0.001$), degree of disability ($p < 0.001$), frequency of tooth brushing ($p < 0.001$), use of dental floss ($p < 0.01$), missing teeth, and use of denture ($p < 0.001$) showed significant association with the OHIP-14 scores. In multiple regression analyses, ADL, frequency of tooth brushing per day, subjective general status, and oral health status were identified as significant factors with the OHIP-14 scores in stroke patients who received care at home.
Conclusion: Among strong patients who received care at home, participants who had more severe physical disability, poorer oral hygiene and more missing teeth showed poorer OHRQoL.

1. Introduction

As the ageing process is rapidly progressing in Korea, the proportion of the elderly population over 65 years has increased from 2.9% in 1960 to 11.3% in 2011, and the ageing index has increased from 6.9 to 72.4, showing that it had increased by over 10 times in the past 50 years (Statistics Korea, 2009). As people get older, higher stroke rates have been reported (Scarborough et al., 2009).

In 2010 almost 50,000 people died because of stroke, which is approximately 7% and 10% of all deaths of men and women, respectively (Townsend et al., 2012). Over 90% of survivors experience permanent impairments, such as hemiplegia and sensory, cognitive, linguistic and functional disorders (Duncan, 1994). Those impairments make it impossible for them to carry out daily activities, including tooth brushing, on their own (Bethoux, Calmels, & Gautheron, 1999; Korea Centers for Disease Control and Prevention, 2008).

Poor management of oral hygiene caused by impairment increases the prevalence of oral diseases (Ship & Chavez, 2000). Also, medication may cause dry mouth, oral ulcers and stomatitis, which cause deterioration of oral health of stroke patients (Janket

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et al., 2003; Gorovenko, Clark, & Aleksejuniene, 2009). Therefore maintenance and promotion of the oral health of patients with stroke-based disability are factors which affect the quality of a patient's life (McMillan et al., 2005).

In particular, patients at home, with encephalopathy-related disability have lower activity of daily living (ADL) scores than those with other types of disabilities (Matthew et al., 2013). And lack of coordination can accelerate poor oral hygiene (Arai, Sumi, Uematsu, & Miura, 2003). Also, in case of stroke care in the home, family caregivers tend to be under stress due to the heavy demands of caring for stroke patients (Sit, Wong, Clinton, Li, & Fong, 2004). Along with this, as a result of the shortage of dental service facilities exclusively for disabled patients and financial difficulties, family care givers tend to overlook poor oral health, which may cause pain, discomfort, and an unsatisfying and less nutritious diet (Kristel et al., 2014). This may deteriorate the oral health-related quality of life (OHRQoL) of stroke patients who cared at home.

Many studies have reported on the health-related quality of life in stroke patients, however studies on the OHRQoL in stroke

Table 1
Distribution of OHIP-14 scores according to demographic, socioeconomic and general health related factors.

Variables	No. (%)	Oral health impact profile-14							Total
		Functional limitation Mean ± SD	Physical pain Mean ± SD	Psychological discomfort Mean ± SD	Physical disability Mean ± SD	Psychological disability Mean ± SD	Social disability Mean ± SD	Handicap Mean ± SD	Mean ± SD
Gender (*N* = 549)									
Male	329 (59.9)	5.7 ± 2.0	5.2 ± 1.8	4.7 ± 1.5	5.2 ± 1.8	3.8 ± 1.4	3.8 ± 0.4	4.7 ± 1.8	33.0 ± 9.0
Female	220 (40.1)	5.9 ± 2.1	5.4 ± 1.9	4.6 ± 1.5	5.1 ± 1.9	3.7 ± 1.4	3.6 ± 1.4	4.7 ± 1.9	33.1 ± 9.4
Age(years) (*N* = 549)									
<60	76(13.8)	5.2 ± 2.1***	5.0 ± 2.1	4.4 ± 1.6	4.6 ± 1.9***	3.9 ± 1.4	3.6 ± 1.3	4.5 ± 1.8	32.2 ± 10.0
60–69	194 (35.3)	5.5 ± 2.0	5.2 ± 1.8	4.6 ± 1.6	5 ± 1.7	3.8 ± 1.3	3.7 ± 1.4	4.7 ± 1.8	32.2 ± 9.2
70–79	222 (40.5)	6 ± 1.9.0	5.5 ± 1.8	4.7 ± 1.4	5.3 ± 1.8	3.8 ± 1.4	3.7 ± 1.4	4.7 ± 1.8	33.7 ± 8.6
≥80	57(10.4)	6.7 ± 2.1	5.5 ± 1.8	4.9 ± 1.5	5.8 ± 2.0	4.0 ± 1.4	3.7 ± 1.6	5.1 ± 1.9	35.8 ± 9.0
Educational level (*N* = 549)									
Unschooled	151 (27.5)	6.2 ± 2.1**	5.5 ± 1.9	4.7 ± 1.5	5.5 ± 1.8*	4.0 ± 1.4*	3.7 ± 1.3	4.9 ± 1.9	34.4 ± 8.7
≤Elementary school	205 (37.3)	5.6 ± 2.0	5.2 ± 1.9	4.6 ± 1.5	5.0 ± 1.8	3.6 ± 1.3	3.6 ± 1.4	4.7 ± 1.8	32.2 ± 9.2
Middle school	80(14.6)	5.3 ± 2.0	5.1 ± 1.7	4.6 ± 1.3	5.0 ± 1.7	3.9 ± 1.4	3.7 ± 1.4	4.6 ± 1.8	32.2 ± 8.6
≥High school	113 (20.6)	6.0 ± 2.0	5.3 ± 1.9	4.7 ± 1.7	5.0 ± 1.9	3.9 ± 1.5	3.7 ± 1.5	4.7 ± 2.0	33.4 ± 9.7
Existence of spouse (*N* = 549)									
Yes	379 (69.0)	5.7 ± 2.0	5.3 ± 1.9	4.6 ± 1.5	5.1 ± 1.9	3.8 ± 1.4	3.7 ± 1.4	4.7 ± 1.9	32.9 ± 9.2
No	170 (31.0)	5.9 ± 2.0	5.4 ± 1.8	4.7 ± 1.5	5.2 ± 1.8	3.8 ± 1.4	3.6 ± 1.4	4.7 ± 1.8	33.3 ± 8.9
Current drinking (*n* = 424)									
Yes	95(22.4)	5.6 ± 2.1	5.1 ± 1.8	4.5 ± 1.6	5.1 ± 1.8	3.7 ± 1.3	3.5 ± 1.2*	4.5 ± 1.7	32.0 ± 8.9
No	329 (77.6)	5.9 ± 2.0	5.4 ± 1.9	4.7 ± 1.6	5.2 ± 1.8	3.9 ± 1.4	3.8 ± 1.4	4.8 ± 1.9	33.7 ± 9.4
Current smoking (*n* = 537)									
Yes	98(18.2)	5.8 ± 2.0	5.1 ± 1.7	4.7 ± 1.5	5.2 ± 1.8	3.8 ± 1.5	3.6 ± 1.5	4.6 ± 1.9	32.8 ± 8.9
No	439 (81.8)	5.8 ± 2.0	5.4 ± 1.8	4.6 ± 1.5	5.1 ± 1.8	3.8 ± 1.4	3.7 ± 1.4	4.8 ± 1.8	33.2 ± 9.1
BMI (*n* = 549)									
Under weight	50(9.1)	5.8 ± 2.0*	5.1 ± 1.7	4.7 ± 1.5	5.2 ± 1.8*	3.8 ± 1.5	3.6 ± 1.5	4.6 ± 1.9	32.8 ± 8.9
Normal	255 (46.5)	5.8 ± 2.0	5.4 ± 1.8	4.6 ± 1.5	5.1 ± 1.8	3.8 ± 1.4	3.7 ± 1.4	4.8 ± 1.8	33.2 ± 9.1
Overweight	132 (24.0)	5.8 ± 2.0	5.1 ± 1.7	4.7 ± 1.5	5.2 ± 1.8	3.8 ± 1.5	3.6 ± 1.5	4.6 ± 1.9	32.8 ± 8.9
Obesity	112 (20.4)	5.8 ± 2.0	5.4 ± 1.8	4.6 ± 1.5	5.1 ± 1.8	3.8 ± 1.4	3.7 ± 1.4	4.8 ± 1.8	33.2 ± 9.1
Subjective general health status (*n* = 549)									
Healthy	40 (7.3)***	4.2 ± 2.1***	3.8 ± 1.4***	3.5 ± 1.7***	4.0 ± 1.9***	3.1 ± 1.2***	2.7 ± 1.1***	3.6 ± 1.4***	24.9 ± 8.5***
Average	65(11.8)	4.9 ± 1.8	4.9 ± 1.6	4.4 ± 1.2	4.5 ± 1.5	3.5 ± 1.2	3.5 ± 1.2	4.7 ± 1.7	30.5 ± 7.4
Unhealthy	444 (80.9)	6.0 ± 2.0	5.5 ± 1.9	4.8 ± 1.5	5.3 ± 1.8	3.9 ± 1.4	3.8 ± 1.4	4.8 ± 1.9	34.2 ± 9.0

N: total number of participants.
n: number of participants who responded to questionnaire and no response was excluded.