J Int Acad Phys Ther Res 2013; 4(2): 545-551
ISSN 2092-8475

www.iaptr.org
http://dx.doi.org/10.5854/JIAPTR.2013.10.25.545

The Correlation between Problematic Behaviors and Activities of Daily Living of Elderly People with Dementia in Patients in a Geriatric Hospital

The purpose of this study is to determine the correlations between problematic behaviors and activities of daily living(ADL) targeting 106 demented elderly people hospitalized in a geriatric hospital. To examine the cognitive function of the subjects, the study used Korean Mini Mental State Examination(K-MMSE). For problematic behaviors and ADL, the study collected data based on Patient Assessment Forms in the geriatric hospital. Among problematic behaviors, apathy/indifference had the highest correlation with the items of ADL. Irritability/lability, agitation/aggression, depression/dysphoria, night-time behavior and wandering also showed to be correlated to items of ADL($p<.05$). This study demonstrated that cognitive function, problematic behaviors and ADL of the demented elderly hospitalized in the geriatric hospital are correlated to each other.

Key words: *Geriatric Hospital; Problematic Behaviors; ADL; Dementia*

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Received : 27 June 2013
Accepted : 24 September 2013

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INTRODUCTION

Dementia is a typical neuropsychiatric disease occurring disabilities in the overall aspects of memory, judgement and social life. It tends to accompany memory impairment, behavior disorder, mental disorder and physical disability. It is known that the average period from the incipient stage of the disease to death takes 8-10 years(1). At present 35.6 million people suffer from dementia in the world(2). In the case of Korea, there are 541,000 patients with dementia among the elderly who are 65 or older as of 2012 and the number of the patients is expected to increase further continuously(3). The occurrence of dementia has become an important health and medical issue causing physical and psychological burdens to the family of the patient, along with the social and economic burdens(4). Disability in memory storing, information retrieving and short-term memory are cognitive functional impairment causing dementia(5), which accompany difficulties in cognitive function and activities of daily living(ADL) and other behavior disorder symptoms(7). Especially, International Psychogeriatric Association(IPA) termed these various clinical symptoms in relation to problematic behaviors as behavioral and psychological symptoms of dementia(BPSD)(8). Problematic behaviors from BPSD not only deteriorate life quality of patients with dementia and their families but also act as an important factor aggravating cognitive function of patients with dementia(9, 10). The impact of BPSD eventually leads to the loss of activity performing abilities required in daily living(11) and it again worsens to a vicious circle leading to functional disabilities(12, 13). Moreover, with progress in cognitive functional impairment, independence in ADL recedes(14) and dependency increases(15). Assessment of ADL for patients with dementia increases the sensitivity to the diagnose of dementia and plays an important role in examining the change from intervention. It also appears to have close relationship with the patients' quality of life and the burden of the family(16, 17, 18).

However, as majority of the previous research to date has focused on the demented elderly residing in convalescent facilities and nursing homes, there are few studies on the demented elderly hospitalized in geriatric hospitals(19, 20, 21, 22). Besides, many researchers have used various assessment tools in relation to dementia, while in Korea it has been using Patient Assessment Form for geriatric hospitals developed by Ministry of Health and Welfare

since 2008 to assess the demented elderly. Therefore it would surely be necessary to investigate the correlations between problematic behaviors and ADL of the demented elderly by utilizing the Patient Assessment Form, which is used in geriatric hospitals in practice.

Thus, this study aims to provide basic data for effective care and treatment of patients with dementia through the research on correlations of cognitive function, problematic behaviors and ADL of the demented elderly hospitalized in geriatric hospital.

METHODS

Subjects

The subjects of this study are 106 elderly persons, at the age of 65 and more, who are diagnosed as dementia from doctors using CT or MRI examination. The periods of disease onset of the patients were at least one year and the hospitalized periods were at least six months. The general features of the subjects are shown in Table 1. This study conducted after receiving consent forms from the patients and their guardians.

Table 1. General characteristics of subjects

Variable Problematic behaviors	Mean±SD
Delusion	.09±.40
Hallucination	.07±.37
Agitation/aggression	.37±.70
Depression/dysphoria	1.53±.71
Anxiety	.54±.69
Euphoria/elation	.13±.42
Apathy/indifference	1.51±.72
Disinhibition	.10±.34
Irritability/lability	.67±.87
Aberrant motor behavior	.08±.33
Night-time behavior	.19±.48
Appetite/eating change	.12±.36
Resist for care	.20±.45
Wandering	.05±.25
Cognitive function	
K-MMSE	9.91±7.61
ADL	
Dressing	3.12±.85
Washing	2.79±1.08
Brushing	2.79±1.08
Bathing	3.54±.56
Feeding	2.46±1.20
Position change	2.70±1.17
Stand to sit	2.83±1.11
Transferring	3.13±1.01
Out of room	3.24±.97
Toileting	3.28±.93

Measurement

Targeting demented elderly persons hospitalized in R Geriatric and Convalescent Hospital located in Suwon City, Gyeongi Province from December 1st to 30th 2012, and based on Patient Assessment Form developed by Ministry of Health and Welfare for the assessment of elderly patients in geriatric and convalescent hospitals, this study examined assessment items of problematic behaviors, ADL of the demented elderly and analyzed the correlations among the items.

Cognitive function

Mini-Mental State Examination-Korean(K-MMSE)(23) is an assessment tool developed to examine cognitive function of Koreans based on Mini-Mental State Examination(MMSE) which was developed in 1975 to examine cognitive function of patients with the early stage of dementia(24). K-MMSE has high reliability with inter-rater consistency of r=0.96($p<.001$) and test-retest consistency of 0.86($p<.001$)(25). It is composed of total 30 points including orientation to time(5 points), orientation to place(5 points), registration of memory(3 points), recall of memory(3 points), attention and calculation (5 points), language(8 points) and visual composition (1 point). K-MMSE assesses the degree of cognitive impairment quantitatively and it is clinically judged if the total points of a patient by the tool is 23 or less.

Problematic behaviors

Problematic behaviors of the subjects consisted of 14 items: delusion, hallucination, agitation/aggression, depression/dysphoria, anxiety, euphoria/elation, apathy/indifference, disinhibition, irritability /lability, aberrant motor behavior, night-time behavior,

appetite/eating change, resist for care, and wandering. Through these items the abnormal behaviors of the patients were assessed. It used 4point scales of "never"(0), "sometimes"(1), "often"(2) and "very often"(3) to calculate the degree of the symptoms.

ADL

ADL of the subjects consisted of 10 items: dressing, washing, brushing, bathing, feeding, position change, stand to sit, transferring, out of room and toileting. The criteria for the assessment were "fully independent"(0), "needing supervision"(1), "needing some help"(2), "needing considerable help"(3), "needing full assistance"(4) and "no occurrence of the behaviors"(5). The degree of each function was calculated by points.

Data Analysis

All the data collected were coded to use SPSS 19.0. General features of the subjects were analyzed for the mean and standard deviation using descriptive statistics. In order to determine each correlation between problematic behaviors and ADL of the demented elderly in a geriatric hospital, the study used spearman correlation coefficient for the analysis. All the statistical significance levesl were set to α=.05.

RESULTS

Correlation of Problematic Behaviors and ADL in Demented Elderly

The result of analysing correlation between problematic behaviors and ADL of the demented elderly showed that agitation/aggression among the problematic behaviors had statistically significant relation to ADL items of washing, brushing, Feeding, position change, stand to sit, transferring, and out of room. There are siginificant negative relation between problematic behaviors which agitation/aggerssion and subsection items of ADL($p<.05$). Lesser occurrence of agitation/aggression relation with higher dependence in ADL($p<.05$). Lesser occurrence of depression/dysphoria relation with higher dependence in ADL($p<.05$). There are siginificant relation between problematic behaviors which apathy/indifference and All subsection item of ADL($p<.05$). this result show that more ocurrence of apathy/indifference related with Higher dependence of ADL($p<.01$). Irritability/lability had statistically significant negative relation with all the items of ADL except for feeding. Problematic behaviors which irritability/lability are significant negative relation with subitems of ADL($p<.05$). Night-time behavior had statistically significant positive relation with

Table 2. Correlation of problematic behaviors and ADL in demented elderly

Variable r_s(p)		ADL									
		Dressing	Washing	Brushing	Bathing	Feeding	Position change	Stand to sit	Transferring	Out of room	Toileting
Problematic behaviors	Delusion	−.053 (.592)	−.121 (.216)	−.087 (.376)	.078 (.425)	−.051 (.606)	−.063 (.522)	−.096 (.329)	−.038 (.702)	−.048 (.627)	.031 (.750)
	Hallucination	−.040 (.686)	−.139 (.155)	−.139 (.155)	−.024 (.805)	−.082 (.405)	−.001 (.995)	−.021 (.831)	−.015 (.880)	−.012 (.905)	−.021 (.832)
	Agitation/ aggression	−.137 (.162	−.235 (.015*)	−.210 (.031*)	−.157 (.108)	−.212 (.029*)	−.214 (.028*)	−.259 (.007**)	−.217 (.026*)	−.211 (.030*)	−.164 (.094)
	Depression/ dysphoria	−.061 (.531)	−.204 (.036*)	−.204 (.036*)	−.016 (.869)	−.140 (.152)	−.021 (.830)	−.057 (.564)	−.010 (.920)	−.026 (.790)	−.044 (.656)
	Anxiety	−.031 (.753)	−.069 (.481)	−.076 (.437)	−.054 (.584)	−.001 (.989)	−.062 (.526)	−.127 (.194)	−.075 (.444)	−.135 (.167)	−.094 (.340)
	Euphoria/elation	.028 (.775)	.038 (.696)	.038 (.696)	.064 (.517)	.112 (.253)	.023 (.818)	−.014 (.886)	−.071 (.471)	−.058 (.552)	.042 (.669)
	Apathy/ indifference	.322 (.001**)	.279 (.004**)	.279 (.004**)	.283 (.003**)	.295 (.002**)	.265 (.006**)	.230 (.018*)	.291 (.002**)	.266 (.006**)	.287 (.003**)

〈continue〉

Variable r_s(p)		ADL									
		Dressing	Washing	Brushing	Bathing	Feeding	Position change	Stand to sit	Transfer ring	Out of room	Toileting
Problematic behaviors	Disinhibition	−.095	−.089	−.060	−.094	−.102	−.131	−.174	−.071	−.108	−.026
		(.332)	(.363)	(.543)	(.338)	(.298)	(.181)	(.074)	(.471)	(.269)	(.788)
	Irritability/lability	−.239	−.293	−.284	−.228	−.172	−.213	−.270	−.227	−.309	−.241
		(.014*)	(.002**)	(.003**)	(.019*)	(.078)	(.028*)	(.005**)	(.019*)	(.001**)	(.013**)
	Aberrant motor behavior	.060	.054	.054	.054	.038	.068	.043	.121	.061	.085
		(.543)	(.585)	(.585)	(.582)	(.697)	(.489)	(.661)	(.216)	(.532)	(.388)
	Night-time behavior	.142	.226	.249	.130	.195	.141	.096	.182	.146	.155
		(.146)	(.020*)	(.010*)	(.183)	(.045*)	(.150)	(.327)	(.062)	(.136)	(.113)
	Appetite/eating change	.039	.098	.098	.142	.163	.117	.080	.097	.052	.043
		(.694)	(.317)	(.317)	(.147)	(.096)	(.231)	(.414)	(.324)	(.593)	(.660)
	Resist for care	.012	−.001	−.001	−.120	−.109	−.096	−.133	−.047	−.015	.034
		(.902)	(.993)	(.993)	(.219)	(.265)	(.329)	(.174)	(.631)	(.878)	(.728)
	Wandering	.015	.077	.077	.176	−.019	−.127	−.116	−.185	−.220	.021
		(.880)	(.431)	(.431)	(.071)	(.846)	(.193)	(.237)	(.057)	(.024*)	(.830)

r(p)
*p<.05

washing, brushing and feeding in ADL. More occurrence of night-time behavior indicated higher dependence in ADL(p<0.5). Wandering showed statistically significant negative relation with transferring in ADL. Lesser occurrence of wandering is related with higher dependence in transferring (p<.05)(Table 2).

DISCUSSION

Korea saw the biggest increase rate of 67.2% in establishment of convalescent hospitals in relation to geriatrics among medical facilities established during the past 5 years(26) and the medical expense for the elderly of 65 and more is increasing every year(27). The government is assisting long-term care benefit of the demented elderly according to the classification of geriatric illness stipulated in Article 2(1) of Long-Term Care Insurance Act(28). In addition, from 2008, mental and physical functions of the elderly hospitalized in geriatric hospitals are using Patient Assessment Form. This study investigated Patient Assessment Forms of the demented elderly hospitalized in geriatric hospitals, which have the biggest increase rate of establishment, and examined correlations among cognitive function, problematic behaviors and ADL.

Previous research showed that depression among problematic behavior symptoms is an important factor influencing cognitive function of the general elderly and the demented elderly(29, 30). According to Kim and Hyun(10), the demented elderly showed to have higher level of depression compared to the general elderly and this depression symptoms had significant correlation with suicidal ideation(r=.51). Benoit et al.(31) also demonstrated that the most frequent symptom among problematic behaviors in 95.2% of patients with dementia was agitation (65.1%), followed by apathy and dysphoria(58.7%).

With decline in cognitive function, dementia accompanies ADL impediment and behavior disorder symptoms(7). Besides, it was reported that partial need in ADL gradually increases suicidal ideation(19), and ADL is correlated to depression(r=.222, p<.001)(32) but result of this study show that depression and subsection of ADL which washing and brushing has significant negative correlation and this result were not similar with previous study.

In studies on the patients with dementia living in different types of facilities showed that 87% of nursing home residents with dementia showed agitation at least a week(33), and the patients in long-term care

institution showed agitation related symptoms and aggression as the typical problematic behaviors (34). However, contrary to these studies, there was also research showing that, after the demented elderly were hospitalized in a geriatric hospital, their dependence in ADL decreased and their problematic behaviors gradually improved(35). This study also found statistically significant negative correlation of agitation/aggression with many items in ADL($p<.05$). The studies so far have found that agitation related symptoms(not being able to remain stable or verbal repeating) can be arisen by physical needs(such as feeling pain, hungry and thirsty) and environmental factors(such as noise, high-mounted space, lower space) and it is necessary to identify and remove the factors influencing occurrence of agitation(36). It was also reported that shower or bath in a tub was effective in decreasing agitation and aggression of the demented elderly(37).

24.5 percent of the demented elderly had night disorder(38), and Chae(39) insist that demented elderly in a geriatric hospital which had night disorder had excellent Feeding and make difficulty about bath. but result of this study were not similar to that. And there are no siginificant correlation between problematic behaviors which delusion, Hallucination, Anxiety, Euphoria/elation, Disinhibition, Aberrant motor behavior, Appetite/eating change, Resist for care and subsection items of ADL.

Through the present study, we found correlations between problematic behaviors and ADL of the demented elderly hospitalized in geriatric hospital and we could identify the features of the patients from the correlations. Therefore, further studies on adequate intervention for these patients can be possible based on this study. Presently, in physiotherapy clinics of geriatric hospitals, various aerobic and muscular exercises are being conducted for the treatment of patients including muscular strength improving exercises, walking and stationary bicycling(40). Many previous studies reported positive effect of exercising on cognitive function and ADL of patients with dementia(41, 42). Therefore, Further studies also would need to investigate intervention of physical therapy including exercises as a method of improving and managing cognitive function, problematic behaviors and ADL of the demented elderly hospitalized in geriatric hospitals.

The limitation of this study is that it could not determine the correlations by the patients' age and different classification of diagnosed dementia. Therefore, it would need continuous study on this.

CONCLUSION

This study investigated problematic behaviors and performance degree of activities of daily living and analyzed correlations among them. The result revealed that problematic behaviors which apathy/indifference and Irritability/lability, agitation/aggression, depression/dysphoria, night-time behavior and wandering are correlated to the subsection items of ADL($p<.05$). It is deemed that result of this study will be effective data to decline Problematic Behavior and to maintain ADL in demented elderly of a geriatric hospital.

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