

A Study on Application of Cognitive Function Improvement Program in Older Adults*

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Abstract. The purpose of this study was to investigate the effects of cognitive function improvement program in older adults. A quasi-experimental study was conducted. It involved a nonequivalent control group design with pretest and posttest. Twenty-four elderly were used for the final analyses. The experimental group received diary writing for 3 months. Analyses were conducted using SPSS version 21.0. After performing the program, the results were follows. 1) There was a significant difference in the FIQ, BIQ, and EIQ measurements between the groups. 2) There was a significant difference in the AFI measurements between the groups. The results show that diary writing program was effective to improve cognitive functions in older adults.

Keywords: cognitive function, older adults

1 Introduction

The size of the aged population has increased rapidly due to the prolonged life expectancy. At the same time, the number of dementia also is soaring [1]. The cognitive function of cerebrum receives and processes various sensory information from outside for individual to think and behave. Cognitive function is classified into basic function the lower function and executive function the higher function. Basic function means the function to study with the individual's cultural and educational experiences like memorizing ability, attentiveness and language etc[2]. Executive function, also called meta cognition, is involved in complicated and creative tasks rather than simple task in executing everyday life through adjustment and planning of behavior for accomplishment of goal like inferring ability, problem solving ability and insight etc[3].

For improvement of the cognitive function of the aged, studies on the socio-psychological change of the aged are in progress with various mediating methods applied. Studies indicate that horticultural therapy[4], improvement therapy[5] and music therapy[6] are effective in improving the cognitive function of the aged.

* This study was supported by the Busan Nurses Association Fund in 2013

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Keeping diary helps improve studying and memorizing ability, attentiveness, linguistic ability and time and space perceptive ability.

The purpose of this study was to investigate the effects of diary writing program on cognitive function in elderly.

2 Method

1.1 Sample

Participants were adult over 65 years old who wanted to participate in cognitive function improvement program. The selection criteria were as follows: (a) agreed to participate in this study; (b) was able to communicate; (c) was able to reading and writing. Twenty-four elderly were assigned to the experimental group(n=12) and the control group(n=12). The experimental group according to the individual shall writing diary 3 times or more a week for 3 months by using the diary book developed by Willis Cognitive Science Research Center. In the diary, the individual puts down date, day of the week and weather, and the work that they did by hours, that is, what they did in the morning, in the afternoon and in the evening.

1.2 Instruments

The elderly cognition function was assessed by the Cognition Scale for Older Adults(CSOA)[7]. There are a total of 7item, which include the word memory test, stroop test, information, digit span, picture copying, picture naming and word fluency. Cronbach's alpha for elderly cognition function with this measure was .88.

1.3 Data analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS)(version 21.0). General characteristics of the participants in the groups were investigated with chi-squared test and t-test of variance by homogeneity test. To examine the differences between group variable, independent t-test was used.

3 Results

3.1 Cognitive function

There was a significant difference in the FIQ ($t=2.870$, $p=.009$), BIQ($t=2.222$, $p=.037$), and EIQ($t=2.222$, $p=.037$) measurements between the groups(Table 1).

Table 1. Differences of cognitive function between the groups

Variables	Group	Before	After	t	p
		M±SD	M±SD		
full-scale IQ (FIQ)	Exp.	95.33±15.11	101.50±14.58	2.870	.009*
	Cont.	95.33±11.90	94.92±14.23		
basic IQ (BIQ)	Exp.	93.92±16.22	100.83±15.20	2.222	.037*
	Cont.	96.75±12.47	96.92±13.87		
executive IQ (EIQ)	Exp.	93.67±14.03	100.00±12.37	2.222	.037*
	Cont.	91.00±11.75	89.83±13.00		

* $p<.05$

3.2 Basic cognitive function

The basic cognitive function was a significant difference in the AFI ($t=2.424$, $p=.024$) measurements between the groups (Table 2).

Table 2. Differences of basic cognitive function between the groups

Variables	Group	Before	Before	t	p
		M±SD	M±SD		
attention function index (AFI)	Exp.	85.50±18.68	97.75±8.23	2.424	.024*
	Cont.	89.17±17.52	86.42±11.75		
working memory index (WMI)	Exp.	91.00±16.17	95.67±19.87	.932	.361
	Cont.	102.00±12.64	102.00±15.50		
working memory index (LFI)	Exp.	98.42±11.20	96.83±15.46	-.974	.341
	Cont.	93.83±10.19	95.33±11.39		
visuospatial function index (VFI)	Exp.	107.50±4.68	109.75±6.98	1.405	.174
	Cont.	102.58±9.48	100.67±12.46		
memory function index (MFI)	Exp.	100.83±21.38	106.67±22.95	.867	.396
	Cont.	96.33±16.13	97.08±18.10		

* $p<.05$

4 Discussion

In this study, the experimental group showed significant differences in cognitive function after nursing intervention. It is regarded that the activities of the aged remembering what they did through the day and recording it helps them with the memory and overall cognitive function. Keeping diary promotes the executing function of the frontal lobe of cerebrum, and thus helps improve the studying and memorizing ability and attentiveness. Through a study on executing memory improvement program[8] and group fine arts therapy program[9] where reminiscence is applied, the score of cognitive function was improved with time. As a result of applying reading therapy program which involved picture book, the score of the aged linguistic proficiency was improved[10], and also in a study that applied Montessori program[11] for the aged, the program was found effective in improving cognitive function. The above preliminary studies all show that the diary keeping in this study was effective in improving the aged cognitive function.

Now when the increase of dementia is emerging as social problem, development of various mediating method to reinforce the cognitive function of the aged is more important than anything else. It is judged that the diary keeping program of this study can be utilized as a way to improve the cognitive function of the aged.

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