

Effects of Cognition, Depression and Quality of Life on Integrative Dementia Prevention Program in the Elderly

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Abstract: Number of aged people has been rapidly increased. As increase of aged people in our country at present, geriatric, chronic disease is rapidly increased and it was emerged as a social issue. In this study in order to prevent dementia that is senile disease creating various social problems at an early stage, integrated dementia prevention program was presented and its effectiveness is intended to be verified. About 24 people normal elderly living in the community. This study was explained to test subjects before starting the test and a consent form for participation in the study was received from them. In the study, intervention period was 10 weeks and it was progressed based on 3 times week and integrated dementia prevention program was directed to be performed for 60 min/1 time. Cognitive function change of test subjects who participated in integrated dementia prevention program is as evaluation score was significantly increased ($p < 0.01$) in MMSE-K and MOCA-K that evaluate cognitive ability before/after participation in the program, cognitive function was shown to be improved. Depression change of test subjects who participated in integrated dementia prevention program is as evaluation score was significantly decreased ($p < 0.01$) in GDS-K score that evaluates depression level before/after participation in the program, depression was shown to be decreased. Quality of life change of test subjects who participated in integrated dementia prevention program is as evaluation score was significantly increased ($p < 0.01$) in EuroQol-5D that evaluates quality of life before/after participation in the program, quality of life was shown to be improved. We have to develop diversified intervention programs for preventing dementia and it is expected that more systematic program would be developed and be widely utilized in the elderly of local community and each institution.

Key words: Dementia, cognition, depression, occupational therapy, elderly, quality

INTRODUCTION

At present, environment of life has been greatly improved owing to development of medical technology and science and consequently as human average life is increased together with enhancement of quality of life, number of aged people has been rapidly increased. Due to increase of aged people in our country at present, geriatric, chronic disease is rapidly increased and it was emerged as a social issue (MHW., 2014). According to data of Statistics Korea in 2015 our country has already entered into aging society in 2000 and 2015, the elderly population aged over 65 was 6.62 million that accounts for 13.1% of the total population and in 2030, it is forecasted that such population would exceed 20% and we will enter into super aging society. As the population is increased,

geriatric diseases are also increased and among these, the disease having the highest incidence rate as a social issue is dementia. Number of dementia patient in our country was App. 540,000 and its number is being increased rapidly and it is estimated that in 2050, number of dementia patient would reach App. 280,000 by it being increased by 2 times every 20 years in the future (MHW, 2015). Dementia is an organic mental disease in which cognitive function and mental function such as judgment, language and emotion being undertaken by human cerebrum is degenerated and it is learned as complex clinical syndrome causing problem in daily life, social activity and inter-personal relation by accompanying symptoms including depression, delusion (Kwon and Park, 1989). Like this as a disease decreasing quality of life of patients themselves and requiring sustained care of

supporter as well, dementia causes serious mental, psychological, physical, economic burden to the promptly supporters (Cho and Ko, 2012). Like this, we have to recognize problems of dementia and now is the time to exert an effort of overcoming dementia at nationwide level for decreasing its incidence rate and moderating development speed by controlling dementia at an early stage (Yang *et al.*, 2012; Logsdon *et al.*, 2002). In this study in order to prevent dementia that is senile disease creating various social problems at an early stage, integrated dementia prevention program was presented and its effectiveness is intended to be verified.

MATERIALS AND METHODS

Participants: Subjects of the study were 24 normal elderly women aged ≥ 65 years who had visited a dementia support center located in the D region on Seoul.

Design: This study is an experimental research for observing change of cognitive function, depression, quality of life by providing normal elderly living in local community with integrated dementia prevention program and pre-post design for a single group was performed.

Measures: In this study, to assess the cognitive functions of elderly subjects, the following tools were used: Mini-Mental Status Examination, Korean Version (MMSE-KC) and Montreal Cognitive Assessment, Korean Version (MOCA-K). For assessment of depression, the Korean Version of the Geriatric Depression Scale (K-GDS) was used. Lastly, quality of life was measured by EuroQol 5 Dimensions questionnaire (EuroQol-5D).

Mini Mental State Examinations-Korea (MMSE-K): As cognitive function scale, Korean type MMSE-K that was standardized by Gwon *et al.* by targeting the elderly of our country based on mini mental state examinations developed by Folstein *et al.* (1975) was used. This tool is composed of total 30 points including disorientation 5 points for time, that for place, memory registration 3 points, memory recall 3 points, attention, calculation 5 points, language function 7 points and understanding/judgment 2 points and it is analyzed that the more score is high, the more is cognitive function high. Reliability at the time of developing this tool was Cronbach's α 0.86 and reliability of MMSE-K evaluation tool was 0.79 (Lee *et al.*, 2008).

Montreal Cognitive Assessment-Korea (MOCA-K): MOCA-K is a tool being prepared based on the Montreal Cognitive Assessment (MOCA) developed by Nasreddine *et al.* (2005) in order to sort out mild cognitive

impairment through its modification, supplement, Korean language translation and validity evaluation. This tool is composed of 7 areas including space execution power (5 question items), vocabulary (3 question items), attention (8 question items), writing skill (3 question items), imagination (2 question items), progressive recollection (5 question items), disorientation (6 question items) in order to evaluate general cognitive ability and based on full score of 30 points, difference of cognition depending on education level was compensated by adding 1 point of target who has education level below 6 years. This tool is an evaluation tool for sorting out mild cognitive impairment and its restricted line is below 22 points that means cognitive impairment. Reliability at the time of developing evaluation tool was Cronbach's α 0.83 (Nasreddine *et al.*, 2005) and that of MOCA-K that is translation tool was Cronbach's α 0.81~0.84 (Lee *et al.*, 2008).

Geriatric Depression Scale-Korea (GDS-K): In order to evaluate geriatric depression level, that was designed by Kee (1996) through modification of developed by Yesavage and Sheikh to be matched with reality of our country was used. This evaluation tool is composed of total 15 question items including 5 items of positive form and 10 items of negative form. No. to 5 items (1, 5, 7, 11, 13) of positive form becomes 1 point and yes to remaining 10 negative items 1 point. Total score of 0-5 points is regarded as normal, 6-10 mild depression and 11-15 serious depression and the more score is high, the more gets depression level serious. In this study also, reliability Cronbach's alpha value was 0.85.

EuroQol-5 Dimensions (EQ-5D): In order to measure, compare quality of life of research targets, evaluation tool of EuroQol-5 was used. This evaluation tool is composed of EQ-5D utility value (EQ-5D index) and EQ-5D visual analogue scale (EQ-5D vas) comprising 5 question items asking present health condition and this is health related quality of life scale (Yun *et al.*, 2004). EQ-5D utility value evaluates 5 question items such as exercise, bathing, daily life activity, pain/inconvenience, anxiety/depression in 3 stages and score of answer of such items is estimated through estimation model for Korean quality of life (Lee *et al.*, 2007).

The study was explained to test subjects before starting the test and a consent form for participation in the study was received from them. In the study, intervention period was 10 weeks and it was progressed based on 3 times/week and integrated dementia prevention program was directed to be performed for 60 min/1 time. This program was performed by dividing it into detailed program of 4 types physical activity including muscular strength, balance and meta memory class, reminiscence therapy, self-esteem training.

Table 1: Comparison of cognitive functions before and after the intervention program

Evaluation	Pre-test	Post-test	t-values	p-values
MMSE-KC	28.04±2.42	28.92±1.38	-2.94	0.007*
MOCA-K	24.21±2.71	26.08±2.60	-4.62	0.000*

The values are mean±standard deviation, MMSE-KC: Mini-Mental Status Examination, Korean version, MOCA-K: Montreal Cognitive Assessment, Korean version, *p<0.05 by paired t-test

Table 2: Comparison of depression before and after the intervention program

Evaluation	Pre-test	Post-test	t-value	p-value
K-GDS	3.25±3.32	1.25±2.21	5.00	0.000*

The values are mean±standard deviation, K-GDS: Geriatric Depression Scale Korean version, *p<0.05 by paired t-test

Table 3: Comparison of quality of life before and after the intervention program

Evaluation	Pre-test	Post-test	t-value	p-value
EuroQol-5D	73.33±10.49	81.67±14.27	-3.92	0.001*

The values are mean±standard deviation, EuroQol-5D: EuroQol five dimensions questionnaire, *p<0.05 by paired t-test

RESULTS AND DISCUSSION

Changes in cognition before and after the integrative dementia prevention program: Cognition change of test subjects who participated in integrated dementia prevention program is as shown in Table 1. As evaluation score was significantly increased (p<0.01) in MMSE-K and MOCA-K that evaluate cognition before and after participation in the program, cognitive function was shown to be improved (Table 1).

Changes in depression before and after the integrative dementia prevention program: Depression change of test subjects who participated in integrated dementia prevention program is as shown in Table 2. As evaluation score was significantly decreased (p<0.01) in GDS-K score that evaluates depression level before/after participation in the program, depression was shown to be decreased (Table 2).

Changes in quality of life before and after the integrative dementia prevention program: Quality of life change of test subjects who participated in integrated dementia prevention program is as shown in Table 3. As evaluation score was significantly increased (p<0.01) in EuroQol-5D that evaluates quality of life before and after participation in the program, quality of life was shown to be improved (Table 3).

CONCLUSION

This study is a similar test research being performed based on pre/post design for a single group for exploring what is an effect of integrated dementia prevention

program for the elderly of local community on geriatric cognitive function, depression, quality of life. When observing the result of this study it could be concluded that integrated dementia prevention program showed a result of improving cognitive function ability, reducing depression and enhancing quality of life of normal elderly. This result was similar to the research result by Hwang *et al.* (2011) and Yunjung *et al.* (2011) and it could be concluded that providing the elderly with dementia or general elderly with diversified dementia-related program would enhance geriatric function. In view of above result, we have to develop diversified intervention programs for preventing dementia and it is expected that more systematic program would be developed and be widely utilized in the elderly of local community and each institution.

LIMITATION

As a limitation of this study, it is hard to generalize the result of this study as number of test subject was limited and it targeted only female subject.

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