Community Health Nursing

EFFECT OF COGNITIVE REMEDIATION THERAPY PACKAGE ON COGNITIVE FUNCTIONS AND QUALITY OF LIFE AMONG ELDERLY AT SELECTED OLD AGE HOMES

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ABSTRACT
Background: Old age, also called senescence, in human beings, the final stage of the normal life span. Cognitive function declines with advancing age particularly in elderly people. Mild Cognitive Impairment (MCI) is an intermediate phase between normal cognitive ageing and overt dementia. **Objectives:**·To assess and compare pre & post-test level of cognitive functions and quality of life among elderly before cognitive remediation therapy package, both in experimental and control group.·To evaluate the effectiveness of cognitive remediation therapy package on cognitive functions and quality of life among elderly, both in experimental and control group. To correlate the mean differed score of cognitive functions and quality of life among elderly, both in experimental and control group **Methodology:** A quasi experimental research design was adopted. After screening a total 20 elderly people, 10 for each experimental and control group were selected were selected by using non probability purposive sampling technique in a selected old age homes. The pre test data was collected through the structured interview schedule, cognitive functions were assessed by Montreal Cognitive Assessment scale and quality of life was assessed by WHO bref scale. Cognitive remediation therapy was given for a period of 6 weeks and post test was conducted. Collected data were analysed by using descriptive and inferential statistics. **Results:** There was a statistically significant difference in the post test level of cognitive functions and quality of life after administration of cognitive remediation package. Effectiveness of cognitive remediation therapy package of Cognitive functions score was from 60% to 80%, percentage gain score was 20% and QOL score was from 50% to 66%, percentage gain score was 16%.The comparison mean score was statically significant in post test cognitive functions and QOL score. (p=0.001). There was a significant positive fair corelation between cognitive functions and QOL in experimental group, there was a significant positive poor corelation between cognitive functions and QOL in control group. **Conclusion:** The overall statistically significant difference in the level cognitive functions and quality of life was revealing the effectiveness of the intervention. Nurse directed cognitive remediation therapy was effective in significantly enhancing the cognitive functions and quality of life thereby reducing the impact of cognitive impairment among elderly.

KEYWORDS : Elderly people, cognitive functions, quality of life, cognitive remediation therapy.

INTRODUCTION

Normal aging is associated with some amount of cognitive impairment. The speed of intellectual and physical activities decreases; however, cognitive decline associated with normal aging does not lead to impairment in activities of daily living. Cognitive Impairment (CI) is when a person has trouble remembering, learning new things, concentrating, or making decisions that affect their everyday life.

MCI is a transitional state between normal cognitive function and dementia. Alzheimer's Association defines MCI is an early stage of memory loss or other cognitive ability loss such as language or visual/spatial perception in individuals who maintain the ability to independently perform most activities of daily living.

Research shows that about 10%–20% of patients with MCI convert to AD every year, and the rate is 10 times higher than that of healthy elderly people. Prevalence rates varying from 3% to as high as 59% with a conversion rate to dementia varying from 8 to 15% only increases the need for diagnostic tests and markers which are in the form of neuropsychological tests, neuroimaging and other biological marker.

A community based cross sectional study conducted in an urban area of Chennai found that overall prevalence (95% CI) of cognitive impairment was 35.06 %. A study conducted among home-based community residents, free and paid old-age home residents on cognitive impairment and Quality of Life(QOL) among old-age groups in Southern Urban India. The results revealed that 42.7% free-home elderly residents, 32.4% of paid-home and21.9% of community-dwelling elderly had cognitive impairment. Cognitive impairment results in decrease in quality of life and increases the risk of dementia and mortality. In addition, it has significant social consequences, results in the loss of autonomy and independence and leading to an increased need for permanent caregivers and assistance by health services. Cognitive Stimulation Therapy (CST) is a cognitive-based psychosocial intervention for people with mild to moderate dementia. Cognitive remediation therapy is based on CST which aims to improve different cognitive functions.

The investigator is much interested in cognitive functions and quality of life of elders, the role of healthy lifestyle programs, such as the use of comprehensive interventions, has been shown to be efficient for enhancing memory and other abilities in aged individuals with cognitive decline, hence the investigator devised cognitive remediation therapy to improve cognitive functions and QOL of elders.

STATEMENT OF THE PROBLEM
A Study to assess the Effect of Cognitive Remediation Therapy Package on Cognitive Functions and Quality of Life among Elderly at Selected Old Age Homes.

OBJECTIVES
1. To assess and compare the level of cognitive functions and quality of life among elders before cognitive remediation therapy package, both in experimental and control group.
2. To evaluate the effectiveness of cognitive remediation therapy package on cognitive functions and quality of life among elders, both in experimental and control group.
3. To correlate the mean differed score of cognitive functions and quality of life among elders, both in experimental and control group

NULL HYPOTHESES
Nh$_1$: There is no significant difference in pre and posttest cognitive functions and quality of life score among elderly in experimental and control group.

NH$_2$: There is no significant correlation between mean differed score of cognitive functions and quality of life among elderly

II MATERIALS AND METHODS
A quasi experimental research design was adopted. After screening a total 20 elderly people, 10 for each experimental and control group were selected were selected by using non probability purposive sampling technique in a selected old age homes.

Description of the tool
Section A : Demographic variables
It includes information about the elders such that age, gender, marital Status, religion, educational Status, type of dietary pattern, family information, past occupational status, duration of stay, past medical

history, routine activities, sleeping pattern, habits, anthropometric measurements, blood pressure, pulse, respiration, blood sugar

Section B: Montreal Cognitive Assessment Tool
The Montreal Cognitive Assessment (MoCA B) measures the dimensions of executive function, fluency, orientation, calculation, abstraction, delayed recall, visuoperception, naming and attention.

Section C: WHO Quality of Life Scale (Bref)
The quality-of-life assessment scale developed by the WHO QOL (Bref Scale) was used.

Ethical consideration
The study was approved by the Ethical clearance obtained from International Centre for Collaborative Research (ICCR) official Ethics Review Board of Omayal Achi College of Nursing, Chennai. Necessary permission from the old age homes authority was obtained. Before data collection, written consent was obtained from the samples. Confidentiality and individual anonymity were maintained throughout the study.

Data Collection Procedure
After formal permission from the old age homes, pilot study was executed. Elderly people were screened using MMSE and samples who fulfilled the criteria were selected. The experimental group pre-test data was collected through structured interview schedule. Cognitive remediation therapy was given for 6 weeks. Post test was conducted after 6 weeks. The same schedule was followed in control group except intervention. The collected data were analysed by descriptive and inferential statistics.

III Results
Demographic Variables
- Most of the elderly people in the age group of 60-65 years, female gender, single belongs to Hindu religion, primary education and non-vegetarian.
- Majority of the elders did not have relationship, their relatives stayed within 5 km radius, their past occupational status was supervisor and unskilled workers. None of them had any property, joined the old age home voluntarily; duration of stay in old age home was 3-4 years.
- Majority of the had diabetes mellitus and hypertension, chronicity of illness was less than 5 years, hobbies were reading, used to participate in cooking activities for less than 5 hours in a week.
- Most of them height was 140-150 cm, weight is 51-60 kg and had healthy BMI.
- Majority of then had normal blood pressure, pulse was 72 beats / mt and respiration 16 breaths/mt.

Table 1: Comparison of level of Cognitive functions score between experiment and control group   (n=20)

| Level of Cognitive functions score | Group | | | | Chi square test |
| | Experiment (n=10) | | Control (n=10) | | |
	n	%	n	%	
Pretest					
Severe Dementia	0	0	0	0	2=0.27 p=0.88 DF=2(NS)
Moderate Dementia	0	0	0	0	
Mild Dementia	7	70	7	70	
Mild Cognitive Impairment	3	30	3	30	
Normal	0	0	0	0	
Posttest					
Severe Dementia	0	0	0	0	2=8.00 p=0.05* DF=2(S)
Moderate Dementia	0	0	0	0	
Mild Dementia	0	0	6	60	
Mild Cognitive Impairment	6	60	4	40	
Normal	4	40	0	0	

Table above shows that there was a statistically significance difference in posttest cognitive functions score between experimental and control group.

Table 2: Effectiveness of Cognitive Remediation Therapy Package on   mean pretest and posttest Cognitive functions   score within Experimental Group   (n=20)

	Group	n	Mean score	Std. Deviation	Mean difference	Student's paired t-test
Experimental	Pretest	10	17.90	3.07	6.00	t=12.13 p=0.001*** DF=09, (S)
	Posttest	10	23.90	2.38		
Control	Pretest	10	17.10	3.14	0.60	t=1.61 p=0.14 DF=09, (NS)
	Posttest	10	17.70	2.41		

The above table showed that the overall mean score in pretest in both experimental and control group was similar, however in post test elders who had received cognitive remediation therapy package showed marked improvement in the cognitive functions score when compared with the mean score of control group elders who had received routine activities in old age home. The calculated paired t test revealed that there was high statistical significant difference was observed between post test between experimental and control group at p<0. 001.
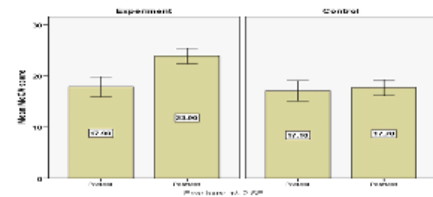

Figure 1: Simple bar diagram with 2 standard error compares the pretest and posttest Cognitive functions score of experiment and control group elderly people

Table 3: Comparison of level of QOL score between experiment and control group n=20

| Level of QOL score | Group | | | | Chi square test |
| | Experiment (n=10) | | Control (n=10) | | |
	n	%	n	%	
Pretest	Poor	3	30	3	30	2=0.20 p=0.65 DF=2(NS)
	Average	7	70	7	70	
	Good	0	0	0	0	
Posttest	Poor	0	0	1	10	2=7.52 p=0.05* DF=2(S)
	Average	5	50	9	90	
	Good	5	50	0	0	

Table 3 shows that there was a statistically significance was observed in posttest quality of life between experimental and control group.

Table 4: Effectiveness of Cognitive Remediation Therapy Package on mean pretest and posttest QOL score within Experimental group   n=20

	Group	n	Mean score	Std. Deviation	Mean difference	Student's paired t-test
Experimental	Pretest	10	65.70	2.98	20.00	t=13.99 p=0.001*** DF=9, (S)
	Posttest	10	85.70	4.03		
Control	Pretest	10	65.60	4.43	0.10	t=0.15 p=0.88 DF=9, (NS)
	Posttest	10	65.70	3.95		

The above table showed that the overall mean score in pretest in both experimental and control group was similar, however in post test elders who had received cognitive remediation therapy package showed marked improvement in the QoL score when compared with the mean

score of control group elders who had received routine activities in old age home. The calculated paired t test revealed that there was high statistical significant difference was observed between post test between experimental and control group at p<0. 001.
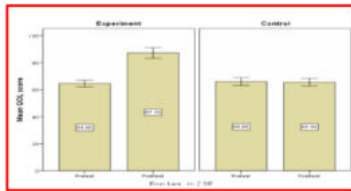

Figure 2: Simple bar diagram with 2 standard error compares the pretest and posttest QOL score of experiment and control group elderly people

Table 5: Correlation between Cognitive functions gain score and quality of life gain score

	Correlation between	Mean gain score Mean±SE	Karl Pearson Correlation coefficients
Experiment	MoCA gain score Vs quality of life gain score	6.00±0.49 20.00±1.43	r= 0.36 P=0.001***(S)
Control	MoCA gain score Vs quality of life gain score	0.60±0.37 0.50±0.40	r= 0.15 P=0.25(NS)

The above table depicts the correlation between the mean cognitive functions score with QoL scores in experimental and control group revealed that the calculated r value indicated that there was a significant positive fair correlation between the mean cognitive functions score and QoL scores which was found be to statistically significant at P<0.001 level in experimental group. No significant correlation was seen in the control group.
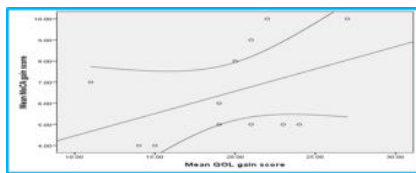

Figure 3 :Scatter diagram with regression estimate shows the moderate positive correlation(r=0.36 P≤0.001) coefficient between QOL gain score and MoCA gain score among experimental group

IV DISCUSSION

Table 2 showed the mean score of pretest cognitive functions mean score was17.90, with post test score of 23.90 with a mean difference of 6.00 showed a gradual improvement of cognitive functions gain score However in control group the pretest mean score of cognitive functions was 17.10, with post test of 17.70 with mean difference of 0.60 .

Table 4 showed the mean score of pretest quality of life mean score was 65.70, with post test of 85.70 with mean difference of 20.00 showed a significant improvement of quality of life score. However in control group the pretest mean score of quality of life was 65.60, with post test score of 65.70 with mean difference of 0.10.

The finding of the study was supported by the Iizuka Ai, et al, evaluated the effects of the picture book reading program on cognitive function in middle-aged people. There was a significant difference in change scores of the category fluency, which is a measure of verbal function, suggesting improvements in Interventional group compared to Control Group. There were also no significant differences in executive function. Hence the null hypothesis NH_1 stated that "There is no significant difference in pre and post test cognitive functions and quality of life score among elderly in experimental and control group" was not accepted.

Table 5showed the correlation between the mean gain cognitive functions scores with quality of life score in experimental group revealed that the calculated r value was 0.36 which infers that there was a significant moderate positive correlation between the mean cognitive

functions and quality of life scores which was found be to statistically significant at P<0.001 level in experimental group. No significant correlation was seen in the control group.The finding of the study was supported by the study conducted by Samuel et al on independent association between cognitive impairment and health-related quality of life (QOL) among elderly across aged care dwelling types. Cognitive impairment had significant negative effect on their health-related QOL (r =-0.10, P=0.01), independent of age, gender, education, chronic illness and dwelling type.Hence null hypothesis NH_2 stated that "There is no significant correlation between mean differed score of cognitive functions and quality of life among elderly" was not accepted.

Implications

- A study on regular physical/chair exercises for 2 to 3 months towards cognitive functions and quality of life can be done .
- A study on brain stimulating activities (word association games, picture puzzle and story telling) for 2 to 3 months towards cognitive functions and quality of life can be done .
- Similar study can be replicated on a larger sample to increase validity and generalizability of findings.

Limitations

- The time constraints and small sample size were the limitations of the present study.

V CONCLUSION

The result of the present study revealed that there was a overall statistically significant difference in the level cognitive functions and quality of life between experimental and control group which was revealing the effectiveness of the intervention. Nurse directed cognitive remediation therapy was effective in significantly enhancing the cognitive functions and quality of life thereby reducing the impact of cognitive impairment among elders.

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