INTERNATIONAL JOURNAL OF HIGHER EDUCATION AND RESEARCH
IJHER, Vol., 11 (1), 2021, 45-53.
www.ijher.com

IJHER

(ISSN 2277 260X)

CODEN:IJHER

ORIGINAL ARTICLE

REGION SPECIFIC COGNITIVE RETRAINING MODULE FOR ELDERS WITH COGNITIVE AND LANGUAGE IMPAIRMENT- PILOT STUDY

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ABSTRACT

*People who develop memory and language impairment or difficulty later in life usually suffer miserably because of their inability to express their hardship and limited resources. Help to them in the way of rehabilitation and cognitive re-training is not easy to get. Very few have access to these facilities in our community. Even if they get any such help it is meant for the learned, or so called, the "English speaking or English knowing" population. At present, the cognitive retraining modules that are used in this region are not originally developed for Tamil speaking clients. Hence, I have made an attempt to develop a new cognitive retraining module, called "PEZHAI -*பெழை*" (which means "a chest or box" which is full of rich treasures and valuables) in TAMIL for people whose primary language is Tamil and who have developed communication problems following cognitive and language impairment due to old age. This is a pilot study of the module that adapts an experimental research design with a control group. Samples are selected on the bases of the inclusion criteria of having language and memory problem following cognitive impairment due to old age. While the experimental group gets cognitive re-training in Tamil along with pharmacotherapy for a period of 3 months, the control group will get only pharmacotherapy. Pretest and posttest scores are discussed.*

Keywords*: cognitive retraining, minimal cognitive impairment, memory impairment, language impairment, elderly*

INTRODUCTION

By using both non-invasive procedures and invasive medical equipment, cognitive performance can be enhanced says Serruya (2008). Non-invasive methods vary from behavioral techniques or assistive software to offer new ways to regain memories and preparation, to

electric stimulation and biofeedback as part of a recovery program to modulate activity in the brain of a patient.

Neuro-psychological training seeks to return the patient to the pre-morbid level of functioning as far as possible. Improved processing functions can be included in the patient's daily work. The basic goal is to help patients perform best and to reduce the care burden on the support system to reduce the demand for less assistance says Shobini Rao (2001)

In our culture, people who typically develop a deficit in memory and language suffer miserably because they are incapable of communicating their challenges and because they are not easily helped in their recovery and cognitive re-training. In our part of the world, very few citizens have access to these facilities. It is meant for the educated population, or for those who know English well, even if they get some such support. The cognitive retraining modules or the screening tools that are used in Tamil Nadu currently are not originally developed in Tamil and they are not culture specific.

Therefore this work focuses on development in TAMIL of a new cognitive retraining module named "PEZAHAI" in the native language Tamil for the elders who have developed problems of memory and communication following evolution of dementia, or minimal cognitive disability. "PEZAHAI" (பேழை) in Tamil, refers to "a box or a chest" with riches and valuables.

In this genesis, the new cognitive retraining program is designed that has different categories to it. They would be named as below.

- கவனக் குவிப்புப் பயிற்சி – Enhancing Attention & Concentration
- நினைவுப் பேழை – நினைவுப் பயிற்சி – Memory Exercises
- புதிர்ப் பேழை - பொருள் அறிதல், பெயர் அறிதல், அடையாளம் காணல், இணைத்தல், பொருத்துதல் - Puzzles
- விடுகதைப் பேழை – விடுகதை விளையாட்டு - Riddles
- வினாப் பேழை – எளிய வினா விடை – Simple Question Answers
- இணையும் புள்ளிகள் – Joining The Dots
- கணிதப் பேழை – எளிய கணிதப் பயிற்சி – Simple Maths

- கருத்துப் பேழை – கருத்துக்கள் அறிதலும் பரிமாறுதலும் – Concept Learning
- கதம்பப் பேழை – குழம்பிய வார்த்தைகளை கண்டுபிடித்தல் – Jumble Words
- வார்த்தைப் பேழை – உருவாக்குதல் – Word Forming
- வாக்கியப் பேழை – உருவாக்குதல் - Sentence Forming
- வார்தைச்சரம் – சரங்களை உருவாக்குதல் – Chain Of Words
- வார்தையடுக்கு – அடுக்கடுக்காய் வார்த்தைகள் - Rhyming Words
- குறுக்கெழுத்து – Crossword Puzzles
- வார்த்தை ஓவியங்கள் – Word Art
- கதை சொல்லிகள் – Storytelling

THE OBJECTIVES OF THE PRESENT STUDY

The objectives of the study are,

1. To develop a new cognitive retraining program in Tamil language, for elderly people with significant cognitive impairment along with language impairment.
2. To assess the effectiveness of the newly developed cognitive retraining program in Tamil language, on elderly people with significant cognitive impairment along with language impairment.
3. To compare the effectiveness of the newly developed cognitive retraining program in the experimental group against the control group.

RESEARCH HYPOTHESIS

RH_1: The newly developed cognitive retraining program would be effective for the elderly with language and memory impairment

RH_2: There will be a significant difference on level of cognitive and language functioning of elders among experimental group as a result of the new cognitive retraining module.

RH_3: There will not be a significant difference between the pre and post test level of cognitive and language functioning of elders among the control group

RH_4: The newly developed cognitive retraining program would be effective in the experimental group against the control group.

SAMPLING

A sample of 7 people above 55 yrs, who are complaining of memory and language difficulties like word finding difficulty, paraphasia, and impaired memory following MCI, early dementia, with a basic educational qualification of VIII std and above, who know to read & write only Tamil pre morbidly and who were referred to the department of Psychiatry, Southern Railway Head Quarters Hospital, Chennai were **included** for this study. Informed consent was obtained from all of them.

People, who were totally mute, illiterate, cannot understand written/ spoken Tamil language pre morbidly, and those with well advanced dementias were **excluded** from this study. 7 more people who matched the experimental group in age and sex with similar memory and language complaints were selected for control group.

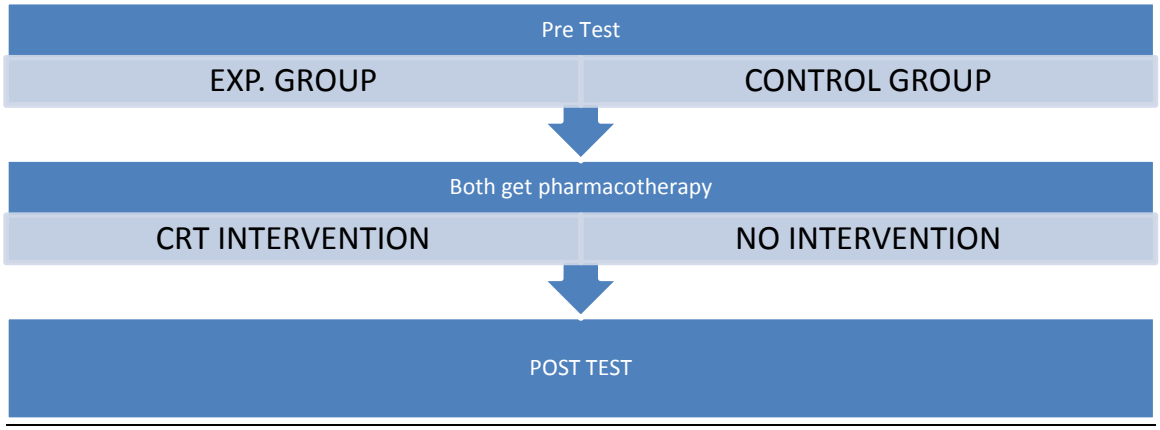
RESEARCH METHOD

In this present study the experimental design with a control group would be adopted.

Step1: The Basic Criteria followed for the study: Those who develop language and memory problem following cognitive impairment due to old age are referred for neuropsychological assessment.

Step 2: The Sample for the present study were given screening Test (Pre test), based on the Inclusion and Exclusion Criteria, and assigned to experimental and control group.

Step3: The Experimental group was given cognitive re-training in Tamil along with pharmacotherapy and control group was given only pharmacotherapy.



INCLUSION CRITERIA:

(Informed Consent of the Concerned Person or Next of Kin is mandatory)

Age: 55 And Above

Sex:	Both Sex
Education:	Minimum 8th Std. Pass
Pre-morbid Ability:	Know to read and write Tamil
Condition:	memory and language problems due to old age

EXCLUSION CRITERIA:

Age:	Less Than 55
Education:	Less than 8th Std.
Condition:	Severe Dementia or Major Psychiatric Disturbances and other Neurological Disorders
Others:	Physical disabilities hampering the person and prevent him from participating in the study and clients who not willing to participate.

TOOLS USED

1. Mini Mental State Examination described by Folstein & McHugh. It was widely used to measure the cognitive function. It is extensively validated and found more reliable. A cut off of 23 for the presence of cognitive impairment has been suggested with variations depending on lack of education.
2. Montreal cognitive Assessment scale was first developed in 1996 and modified in 2004 by Z.Nasreedin. This is a better and sensitive scale in identifying MCI than MMSE. A score of 26 and above is considered normal.
3. Translated version of the Mississipi screening for aphasia is a brief tool developed in 2004 by Nakase-Thompson et al and repeatedly used by many to identify the expressive and receptive language disabilities.

PROCEDURE:

Pre assessment was done with Mini Mental Status Examination, Montreal Cognitive Assessment 7.1 original version, and Language assessment test (a translated version of Missippi Aphasia Screening Test) to both the groups.

A new Cognitive re-training program with a structured module was presented to the seven experimental clients, in the increasing order of difficulty for a period of three months. Every Tuesday of the week the clients assembled as a group for the retraining program. They were assessed at the end of 3 months. They were given daily exercises as home work every week. Next of kin of the clients acted as co-therapists.

Post intervention assessment was done and performances and scores were compared with pre assessment scores and the effectiveness of the program was found. Statistical significance was obtained using appropriate tools.

RESULTS AND DISCUSSION

Table 1 show that the experimental group, in pretest having 25.14 MMSE score and in posttest having 27.43 practice score. The difference here is 2.29, which is large and statistically significant. Among the control group, in pretest they are having 26.14 MMSE score and in posttest they are having 25.28 score, so the difference is -0.86, this difference is small and it is not statistically significant.

TABLES

Table 1: COMPARISON OF PRETEST AND POSTTEST MINI MENTAL STATUS EXAMINATION SCORES BETWEEN EXPERIMENTAL AND CONTROL GROUP

Group		**N**	**Mean**	**SD**	**Mean difference score**	**z**
Experiment	Pre-test	7	25.14	2.60	2.29	**2.45***
	Post-test	7	27.43	1.51		
Control	Pre-test	7	26.14	0.89	-0.86	1.86^{NS}
	Post-test	7	25.28	0.95		

** **significant at p=0.02** NS – not significant*

Table 2: COMPARISON OF PRETEST AND POSTTEST MONTREAL COGNITIVE ASSESSMENT SCORES BETWEEN EXPERIMENTAL AND CONTROL GROUP

Group		N	Mean	SD	Mean difference score	z
Experiment	Pre-test	7	22.14	1.77	2.43	**2.45***
	Post-test	7	24.57	1.71		
Control	Pre-test	7	22.28	2.05	-0.57	1.86^{NS}
	Post-test	7	21.71	2.98		

**** significant at p=0.02** NS- not significant*

Table 3: COMPARISON OF PRETEST AND POSTTEST LANGUAGE ASSESSMENT SCORES BETWEEN EXPERIMENTAL AND CONTROL GROUP

Group		N	Mean	SD	Mean difference score	z
Experiment	Pre-test	7	75.00	10.5672	8.85	**2.20***
	Post-test	7	83.85	5.6988		
Control	Pre-test	7	69.42	5.5032	-1.14	0.94^{NS}
	Post-test	7	68.28	6.6009		

****significant at p=0.03*** *NS- not significant*

Table 2 shows that the experimental group, in pretest are having 22.14 MOCA score and in posttest having 24.57 practice score. The difference is 2.43, which is large and is statistically significant. Among the control group, in pretest they are having 22.28 MOCA score and in posttest they are having 21.71 score, so the difference is -0.57, this difference is small and it is not statistically significant.

Table 3 shows that the experimental group is having 75.00 language assessment score and in posttest they are having 83.85 practice score, so the difference is 8.86, this difference is large and it is statistically significant. Among the control group, in pretest they are having 69.42 language score and in posttest they are having 68.28 score, so the difference is -1.14, this difference is small and it is not statistically significant.

Further, on pretest, it is found that MMSE, MOCA and language assessment score difference between experiment and control group are not found to be statistically significant. This proves the homogeneity of both the groups.

On Post test, MMSE, MOCA and language assessment score differences between experiment and control group are found to be statistically significant which prove that the intervention has been helpful to the clients in experimental group.

Among the Experimental group, the difference of MMSE, MOCA and language assessment scores between pretest and posttest are statistically significant and shows that CRT has helped the clients.

Among the Control group, the difference of MMSE, MOCA and language assessment scores between pretest and posttest is very small and they have remained the same and found to

be not statistically significant. This proves that pharmacotherapy alone may not help clients in improving their memory and language difficulties and they need cognitive training.

CONCLUSION:

In the present study, age and sex wise both experimental and control group had no significant difference along with Pretest scores in all the three tools administered, which shows they were homogeneous in all aspects. Whereas Posttest scores among experimental group for all the three tools administered were significant. At the same time, posttest scores for control group were not significant for all the three tools administered.

This shows that, the NEW COGNITIVE REHABILITATION TRAINING MODULE developed and administered to the experimental group seems to have been helping the elderly, and this kindles our hope that if given for a longer period, we can expect to see remarkable improvement in such clients.

On the other hand, people in the control group have stayed more or less stagnant after three months, who did not get any cognitive rehabilitation training. This finding only reiterates the fact that cognitive rehabilitation training is necessary for elderly who complain of memory and language difficulties in the later years along with pharmacotherapy, and that the present module of Cognitive Retraining is going to be of much use to them.

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