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EFFECT OF MEMORY RETRAINER ANDROID GAMES TO IMPROVE MEMORY AMONG GERIATRIC INDIVIDUALS

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Abstract - This To evaluate the Effect of memory Retrainer android games to improve memory among geriatric individuals. Memory loss is most common in geriatric individual due to damage to brain cells, which results in impairments of cognitive, behavioral, and emotional processes. Mental stimulation and activity, such as puzzles, games, and reading, can help to delay the disease's progression. Memory retrainer Android games make therapy entertaining and exciting, and boost compliance rates, improving these patient's memory eventually improving the memory, independency and day to day life of the individuals. So the purpose of the study is to find out whether the memory retrainer android games are effective in improving memory in geriatric individuals

Objective: To determine the Effect of memory retrainer android games to improve memory among geriatric individuals.

Method:

STUDY DESIGN: Quasi-experimental study.

SAMPLING TECHNIQUE: Convenient Sampling technique.

SAMPLE SIZE: 30 geriatric individuals.

Result: The statistical study revealed that among 30 geriatric individuals aged 60years and above, there is an improvement in memory by using the memory retrainer android games.

Conclusion: From this result, it has been concluded that the individuals within the age group of 60years and above showed an improvement in memory by the memory Re-trainer android games.

***Key Words*:** Memory functioning questionnaire [MFQ], Geriatric individuals, Memory retrainer android games.

1.INTRODUCTION

Memory refers to the brain's ability to encode, store, and retrieve information or data when it is required. It is impossible to carry out daily activities, develop relationships, or study and progress in life without memory. Memory, in other words, reflects our identity. The strengthening of synaptic connections between nerve cells is how memories are stored.

Memory-related structures include the hippocampus, parahippocampal gyrus, fornix, mammillary bodies, and the cingulate gyrus[1]. Memory isn't perfect all the time. It may take longer to remember things as you get older[2]. There are three basic types of memory that have been identified: Short-term and long-term , sensory memory[3].

Short-term memory (STM) is the preservation of information over a short period of time, usually seconds, and is the result of intentional maintenance of sensory input during this time frame. It's also known as working memory or primary memory. Only a limited quantity of data is kept on file for brief intervals of 15 to 1 minutes. When information is deliberately stored in STM through the update process, it becomes long-term memory[4]. The constant storing of information is referred to as long-term memory. This data is mainly hidden from our consciousness, but it can be retrieved and stored in working memory whenever it is needed[5].

LTM is of 2 types Explicts memory & Implicts memory[6]. The shortest form of memory is sensory memory (SM). It refers to the ability to store impressions after the original stimulation has finished. It is in charge of collecting stimulus from the five senses and storing it quickly concluded[7]. By paying attention, which signifies focusing on one component of the environment while disregarding others, SM converts into short term memory[8].

Memory loss is most common in geriatric individual due to damage to brain cells, which results in impairments of cognitive, Behavioral, and emotional processes[9]. Physical inactivity, tobacco use, bad diets, harmful alcohol use, hypertension, diabetes, hypercholesterolemia, obesity, and depression are all risk factors. Social anxiety and cognitive inactivity are two more apparently controllable risk factors[10].

The projected prevalence rate for the entire population aged 75 and above was 16.3%, with women having a little higher rate (16.5%) than men (15.8%). The majority of them (7.8%) resided in nursing facilities. The prevalence rate varied between 10.5% in the sample of people who lived at home, 71.6% in nursing homes, and 22.6% in homes for the elderly. Women had a prevalence rate of 77.8% compared to men's 54.1% among subjects who resided in nursing homes, a significant difference.[11]

The symptoms of memory loss in geriatric individual includes Confusion, Changes in personality, Withdrawal and apathy, Loss of functional capacity to carry out daily duties, Angry, aggressive, distressed, and psychotic symptoms, Anxiety and depression, Sleep issues, Parkinson's, Pain, Falls, Diabetes, Incontinence, Sensory deficiency[12]. Medical history, physical examination, blood tests, and typical changes in thinking, behaviour, and the effect on daily living activities can all be used to diagnose memory loss. Memory loss is difficult to diagnose because many of the symptoms and brain alterations are similar. Secondary care providers typically use imaging or cerebrospinal fluid examination to assist in the diagnosis of specific memory loss[13].

One of the acknowledged cognitive skills that deteriorates with ageing is executive function. They

are the greater brain functions that let people focus, make plans, and react. Improved executive functions may be a result of playing serious games. People with memory loss should stay physically, cognitively, and socially engaged for as long as possible. Mental stimulation and activity, such as puzzles, games, and reading, can help to delay the disease's progression [14].

Console-based therapy is a branch of physiotherapy study that involves the application of technology for rehabilitation. Console-based rehabilitation is a beneficial tool in which helps the therapists to engage with their patients, make therapy entertaining and exciting, and boost compliance rates, ultimately improving these patients' functional outcomes. The memory retraining games have a considerably greater impact. These improve basic perceptual and cognitive abilities. These benefits are powerful enough that educators employ these games for real-world objectives like memory loss training and rehabilitating people with perceptual or cognitive impairments [15].

By using memory retrainer games geriatric memory loss patients can learn to successfully perform tasks requiring a variety of cognitive skills [16].

Memory loss can be brought on by cognitive decline as we age. The older adults must engage in activities that improve their cognitive function is memory games. Because they can improve the memory and cognitive function, brain exercises and therapeutic memory games can help lessen effects of memory loss[17].

The senior citizens enjoy using the games and find them to be mentally stimulating and also it could promote social engagement and self-rehabilitation [18].

2. Body of Paper

METHODOLOGY:

In this study, 30 samples have been selected under inclusion and exclusion criteria by the convenient sampling technique. Informed consent were obtained from the participants and detailed procedure were explained. The study was conducted in Saveetha medical college and hospital, the samples were observed in a time period of 1 months.

By using Memory functioning questionnaire, the extent of memory loss is assessed in order to get pre-test and post-test scores.

The individuals are made to play the memory retrainer android games, having the program frequency of 6 days per week for 4 weeks performed for 60 minutes, one time a day. The participants were made to play the android game which have the following levels as 1. Memory grid-where the individuals is made to memorize the highlighted blocks in the second step which were showed in the first step. 2. colour-flexibility-in this step the individuals are asked to answer whether the given colour is correct or wrong. 3. sort the digits-speed-in this step the individuals are asked to choose the numbers in a correct order. 4. Remove the shapes-speed-in this level the individuals are asked to identify the shapes which are given above for These four levels progresses to hard levels step by step according to the individual's performance. 5. Image Vortex- for memory- In this level the participant was asked to memorize all the icons that has shown after when the new icons appears then the participant was asked to click on the new icon. 6. Traffic lights-for Flexibility- In this level the participants were asked to remember the colour position on the traffic light and

the participant was asked to identify whether the new position of the colour matches the previous one or not.

INCLUSION CRITERIA:

1. Participants of Age group 60 and above.
2. Both males and females are included.
3. Participants with memory loss (Based on memory functioning questionnaire).

EXCLUSION CRITERIA:

1. Participants who are not interested in this study.
2. Participants with other neurological conditions.
3. Participants who underwent any recent surgeries or injuries.
4. Participants who does not meet the age criteria.**STATISTICAL ANALYSIS:**

Descriptive analysis was done and the mean value of Pre-test and Post-test values of the subject were calculated. The percentage of memory was calculated based on the data collected from the questionnaire.

RESULT: The statistical study revealed that among 30 geriatric individuals aged 60years and above there is an improvement in memory using memory retrainer android games.

TABLE 1: THE COMPARISION OF PRE-TEST AND POST-TEST VALUES OF MEMORY FUNCTIONING QUESTIONNAIRE

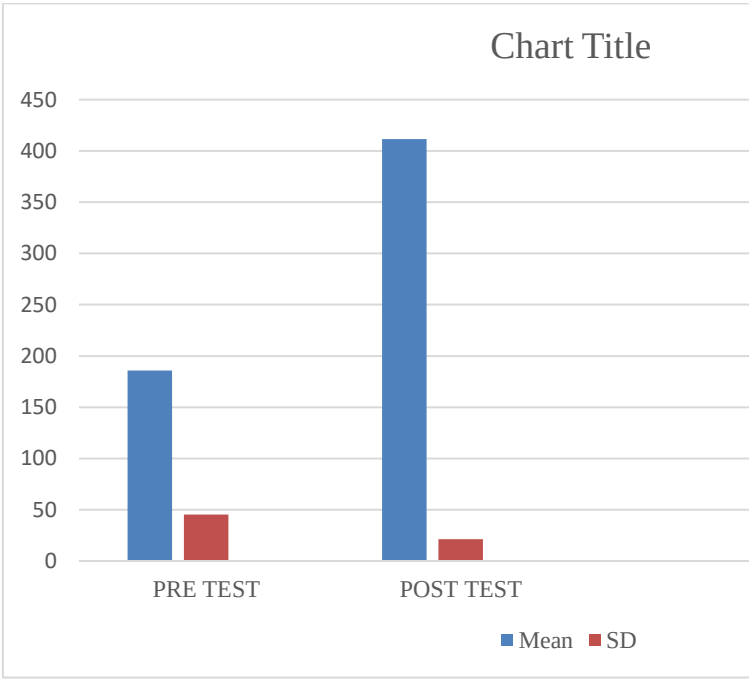
	Mean	**SD**	**t-value**	**P-Value**
PRE-TEST	185.87	45.42	24.6303	< 0.0001
POST-TEST	411.50	21.32	24.6303	< 0.0001

The Above data showed that

The mean average of pre-test value is found to be 185.87

The mean average of post-test value is found to be 411.5

GRAPH 1: COMPARISION OF PRE-TEST AND POST-TEST VALUES OF MEMORY FUNCTIONING QUESTIONNAIRE



DISCUSSION:

Memory loss is most common in geriatric individual due to damage to brain cells, which results in impairments of cognitive, behavioral, and emotional processes. Mental stimulation and activity, such as puzzles, games, and reading, can help to delay the disease's progression. So memory retrainer android games are used to improve memory among geriatric individuals. Also the collected data stated the memory

retrainer android games improves the memory, independency and the quality of life of geriatric individuals. Therefore the memory of geriatric individuals has improved and got better results. So the study states that memory retrainer android games improves memory and independency.

According to article proposed in 2022 by Dari Alhuwail, Alaa Abd-Alrazaq, Mowafa Househ they concluded that Executive function are the higher-order cognitive functions that allow someone to focus, organise, and act. The development of games for specific goals other than amusement, known as serious games, may help to enhance executive functions.

Gregory D. Clemenson, Shauna M. in year 2020 recruited 56 older adults of age (60-80) in their study, concluded that In a group where memory is already deteriorating due to ageing, playing video games for four weeks can boost hippocampal-based memory. These mobile gaming treatment options are doable, practical, short-term(4weeks), minimal(30 minutes/day), and they may be carried out remotely from home.

Pilar Toril, Jose M Reales in 2016 in frontiers in human neuroscience they concluded that because the ageing brain still exhibits some plasticity, playing video games can help older persons improve their working memory and other cognitive skills. The Jigsaw puzzle task and Corsi blocks task are two computerized tests created to evaluate visuospatial working memory. Most importantly, They discovered after training, there were notable improvements in the trained group while there was no change in the control group. The trainees also showed improvements in their episodic memory and short-term memory.

3.CONCLUSION:

In this study, it has been concluded that subjects within the age group of 60 and above showed an improvement in memory by using memory retrainer android games. The patients memory and quality of life by this investigation, yielding positive therapeutic results.

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