

The role of occupational therapy in improving cognitive status at the stage of mild cognitive impairment in the elderly

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ABSTRACT

Background: The subject of remembrance affects our daily lives, so functional therapists have undertaken several techniques and strategies as well as therapeutic programs to preserve memory, focus and autonomy in older people's lives for as long as possible.

Results and discussion: The use of functional therapists for the realistic orientation therapy program and voluntary testing and counselling program has an effective impact on memory treatment in the elderly and has had important results on cognitive function. After these programs were applied, the Allen scale was used to examine the cognitive level to ensure that their condition improved. A set of tests such as the Mini Mental State Test and the Point Binding Test used part B and measured logical memory on the Wishler Memory Scale on the group of individuals to whom a multi-field intervention was applied to measure how well their cognitive performance improved after the end of the intervention.

Four types of interventions were used, namely, one-sided, multi-field, computerized and multimedia interventions. They all showed a significant improvement in cognitive function. Job therapists view Cook's theory as very useful, and the job-centric cognitive rehabilitation program has had a positive impact on cognitive function and cognitive abilities, improving their focus and performance in their daily life activities.

Conclusion: Occupational therapists have the potential to make valuable contributions to the development and improvement of the cognitive status of the elderly and the techniques, programs and evaluations they use in the treatment of this condition have proved effective.

Keywords: activities of daily living, occupational therapy, dementia, mild cognitive impairment, memory.

I. INTRODUCTION

The search for what memory is and how scientists preserve it has been filled for ages because it is not easy to understand that memory is not important to humanity in general. Memory is what we are and what distinguishes us as individuals. It is a prerequisite for learning and its capacity and magnitude is important for the continuation of the learning process. From the moment we are born, our brains are infused with an enormous amount of information about ourselves and our surroundings. Despite the growing reliance on external aids (such as paper or electronic notes), we rely on our memory in all decisions and what we do in our daily lives. Humans generally retain types of memories for different periods of time. Short-term memories last from seconds to hours, while long-term memories last for years. We also have working memory, allowing us to keep something in our minds for a limited time by repeating it. There are consciously stored memories and unconscious memories. Consciously, public information such as Syria's capital, Damascus, and information that unconsciously contains these procedural memories that our body uses to remember the skills we learned. Like when walking down the street without thinking about the traffic mechanism. We

all know the tragedy of memory deficiency due to many diseases such as Alzheimer's disease. The preceding facts elaborate the importance of research in this area.

We can define cognition as the information that enters the brain from the environment is constantly changing. We adapted and responded to these changes by modifying our actions and behaviour.

New information entering the system is organized, classified and stored for future use. Stored knowledge is recovered from our past experience and combined with current inputs. Future business plans and behaviour are recovered and activated at the right time and place. Cognition is all the mental processes in the brain involved in this acquisition and use of knowledge. The early stage in the processing of sensory information is perception, sometimes defined as "understanding the senses." Perception regulates sensory information from the environment to meaningful information. All senses, vision, sound, touch, taste, smell, pain, balance and truth, capture information from the world around us and from the body. The brain transforms all these inputs into our direct experience and interactions with the world. We are usually unaware of perception, and he acts very quickly. However, perception does not simply depend on the input the brain receives through the senses. Our

expectations and past experience have an active impact on perception.

Mild cognitive impairment has been defined as a specific decline in cognitive performance requiring some adjustments in order to maintain independence and do ADL (activities of daily living) but not contrary to independence. [1]

Dementia is commonly defined as a cognitive decline clinical syndrome that is severe enough to interfere with social or professional performance. Remains a constant reference point in the proposals for revised diagnostic criteria for AD (Alzheimer's Disease). [2]

Due to the prevalence of reduced memory in most of the world's older population, some researchers conducted psychological assessments according to DSM-III-R after applying effective occupational therapy program as well as functional rehabilitation and finding solutions to memory problem. The occupational therapy program was found to be far more effective than applying functional rehabilitation alone to levels of cognitive performance, psychosocial performance and life satisfaction. These results support the assumption that if elderly patients are stimulated longer, they are able to stimulate basic resources for cognitive and psychological performance. Activation of occupational therapy has a place in long-term treatment for geriatric patients. [3]

In a study of cases of patients diagnosed and recorded cases of MCI (mild cognitive impairment) and cases of dementia for the elderly where they received the occupational activity program in terms of cognitive function, physical activity and Craft vocational function as the way by applying a weekly session for 8 weeks. The two groups then showed a marked improvement in cognitive function and a decline in depressive status. In particular, a light cognitive impairment group has shown a significant impact on the cognitive function needed to maintain concentration and memory compared to dementia, and to restore cognitive function in the light cognitive impairment group in the future. [4]

2,711 adults with MCI were enrolled in a review of 28 studies between 2011 and 2021. Report more volumes of huge efforts in the multi-field comprehensive cognition group, memory, executive function, verbal fluency and mini-mental state exam, category verbal fluency, Wessler scale to measure logical memory, as well as the multi-field group. To know the usefulness of multiple interventions compared to single interventions and the importance of the length of intervention. Total interventions lasted less than a year resulting in improvements in overall cognition, operational function, memory and verbal fluency thanks to multiple interventions compared to individual interventions in older people with MCI [5].

The results of cognitive training conducted by researchers on older populations in Asia showed that cognitive training can be effective in improving cognitive function in adults with MCI in various aspects, including memory, attention, executive function, reducing self-memory complaints, and improving daily life skills. It was found that different

methods of cognitive intervention, i.e. individual and multimedia modalities can be a promising intervention in improving the overall cognitive capabilities of adults with MCI. Unitary cognitive intervention has been affected by the impact of distant transition which has improved other untrained cognitive areas. Multi-field and multimedia cognitive interventions have shown an improvement in global cognitive function and the impact of transport on non-cognitive areas such as everyday activities and mood. [6]

The results of another study showed higher progress in the occupational task exercise group with statistically significant differences between the group in memory compared to the cognitive training group, the exercise group, the functional status compared to the queue monitoring group, the cognitive training group, and the burden on the caregiver compared to the cognitive training group and the exercise group. The exercise of professional functions using simulated functions as a means of the Joint Exercise and Knowledge Programme was found to be feasible and useful in improving the memory and professional status of older persons with moderate cognitive impairment in line with the reduction of care burdens for their caregivers. At the same time, the results require further longitudinal studies that are well designed to draw more specific conclusions and examine the sustainability of impacts. [7]

A study conducted through which 24 databases and 13 sources were inspected, the papers were analyzed to establish the conformity of CST (cognitive stimulation therapy) with occupational therapy. This intervention strategy is found to be consistent with occupational therapy values and to be useful for developing rehabilitation programs. Cognitive stimulus therapy is a supportive and functionally oriented strategy aimed at enabling individuals with mild to moderate dementia to remain meaningfully engaged in their lives and surroundings. Occupational therapists are well suited to the implementation of CST because it corresponds to the values and objectives important to their profession. Current research examining the effectiveness of the CST is encouraging and has provided good evidence to support the use of these interventions. As a result, CST may provide a useful basis for building multidimensional programs and care plans for individuals with mild to moderate dementia. Occupational therapists have the potential to make valuable contributions to future research and programme development in the CST [8].

Occupational therapists promote the safety and autonomy of older people with cognitive disabilities. Technology, called COOK, offers support on a touch screen installed next to the burner to support task performance while correcting risky behaviours. This study aimed at documenting (1) occupational profiles according to diagnosis (2) types of interventions used to increase autonomy in the kitchen (3) facilities and obstacles to customers when using COOK

Occupational therapists (1) identified different occupational profiles and (2) interventions for both diagnostics. Using COOK (3) may be more useful in mild cognitive impairment, many challenges occur when used with Alzheimer's patients. [9]

Snowball technology was used on participants in a study, where individual interviews were conducted in semi-structured text of questions and data was analyzed using substantive content analysis. The findings found that occupational therapists are professionals in working with older people with MCIs, especially with regard to the allocation of resources aimed at improving or reducing difficulties in performing day-to-day activities that directly involve cognitive aspects after providing individual and collective care to individuals with moderate cognitive dysfunction during this study. to prevent cognitive decline, cognitive and functional improvement, maintain autonomy, improve quality of life and provide emotional support. [10]

The study suggests that OCCRP (occupation-centered cognitive rehabilitation program) is an appropriate intervention through which to improve the concentration and beneficial abilities of daily life in patients with mild cognitive impairment. [11]

We all know that memory plays a vital role in many aspects of our daily lives. Without memory many other important abilities (such as language or maintaining social relationships and learning about familiar things) will not be possible. Memory is essential to record events in our lives. It is a process of "selectivity" and "positivity", and memory is an active, subjective and intelligent reflection of our past experiences, linked to learning but not to be confused with learning, many people benefit greatly from the perception of the information they study. Pay attention to photos, charts and other drawings in the books. If there are no visual signals to help, people try to create their own signals by drawing schemes or shapes in margins or using pens or pens of different colors to compile relevant ideas in written study materials. Through all these studies we found that occupational therapy is capable of maintaining memory for as long as possible as most adults experience a certain degree of memory loss as they age, which can be accelerated if Alzheimer's disease or any other type of dementia is diagnosed. occupational therapists assess patients to identify their strengths and disabilities, identify which areas of performance need intervention, while a full recovery of cognitive abilities is unlikely, occupational therapists work with patients to develop routines that reduce the impact of memory loss or confusion, and create compensatory strategies that allow patients to participate in many daily activities or even improve their ability to remember.

II. RESULTS and DISCUSSION

We found that the effect of occupational therapy is effective in the treatment of memory in the elderly as there were important results in both cognitive and depressive function, and used two therapeutic programs:

Reality Orientation Therapy (ROT) is a training programme for Alzheimer's patients that includes time in early care centres, real-life training emphasized the need for systematic manoeuvre as a means of training dysfunction capacity by asking answered questions about its human strength Patients with Alzheimer's were practicing real-life training as a way to train them to move from one place to another without losing their way. And the Volunteary Conceling & Testing method (VCT) is a way of providing evidence of information that was initially intended to be obtained and gradually reducing part of it when learning information and ultimately allowing information to be saved without evidence that has been reported as an effective way of improving memory.

In the moderate cognitive impairment group, a higher score was found in ROT and VCT in each treatment session than in the dementia group, indicating the importance of early intervention in cognitive rehabilitation.

Allen Cognitive level screen (ACLs) is a tool used for simultaneous diagnosis and treatment of patients with mild cognitive impairment and dementia. [4]

We saw an improvement in grades when using MMSE (Mini-Mental State Examination) , TMT-B (Trail Making Test part B) , WMS-LM (Wechsler Memory Scale Logical Memory) in the multi-field group where the intervention was mainly with physical exercise, cognitive training, mind, body, music, supplements, social participation and education by a small to average amount indicating an improvement in general perception, cognitive function, verbal fluency, and this confirms that joint interventions outperform individual in improving cognitive performance in older people with MCI. [5]

4 types of cognitive intervention (single, multi-field, multi-field, computerized and multimedia intervention) were used All of which showed a significant improvement in cognitive function, when single-field work was trained in attention or memory and improvement was done in trained and untrained areas such as executive functions. It was noted that the specific hearing treatment practice in older people with MCI enhances cognitive ability in testing hearing signal detection and memory improvement, multi-field cognitive intervention has worked on more than one targeted cognitive field such as attention, memory and operational operational areas This has enhanced memory capability and the speed of manufacturing executive function, label and linguistic fluency. It was noted that it enhanced knowledge work in general in rural areas with a low level of education.

Computerized multi-field cognitive practice has influenced improved memory, visual spatial testing and executive function. They found that people who were motivated improved further.

Multimedia cognitive intervention blends its work in more than one area such as attention, memory, processing speed, operational training and other activities such as aerobic exercise, music therapy, physical training, reality guidance and memory therapy. They found that mental activity exercises were more efficient than physical. [6]

MMSE is a widely used psychiatric assessment, used to determine levels of cognitive function. It is designed for clinical use in the diagnostic process in dementia assessments and is claimed to facilitate the assessment of progress and severity. MMSE assesses various cognitive functions, including memory, attention and language. In the assessment of dementia. There have been numerous studies showing that MMSE is a relatively sensitive sign of public dementia with good reliability among assessments. Among the other advantages of MMSE is the fact that it is fast and fairly easy to manage, and there is a standard registration system. Many deficiencies in MMSE were discussed, and the main problem was that MMSE is not very useful in detecting mild cognitive impairment. It is also difficult to use MMSE to capture changes in acute dementia [12].

TMT-B is known as a simple but effective tool for assessing cognitive capabilities such as executive function, perception function, motor optical synergy tracking and attention.

Beetz and Fisher suggested using TMT-B as a short test to predict future traffic accidents or driving test failures and sometimes in assessing elderly drivers. Many studies considered that TMT-B is an easy and short test with predictability of driving fitness in older people or in drivers with cognitive disabilities. These studies reported a significant correlation between drivers' involvement in road traffic accidents and their poor performance at TMT-B. Other studies have suggested that elderly drivers performing poorly on TMT-B have a higher risk of being involved in traffic accidents. Although the TMT-B test may be a simple and useful measure of executive function as an indicator of an individual's fitness to drive, it does not give a clear picture of the job and is not an easy test for management.

TMT-B has been used as a measure of executive function as well as for processing speed and sight scanning. It imposes strong cognitive requirements.

The Korean version of TMT-B15) was used for the paper and pencil version of the test. The initial endpoint of the test was the time taken to complete the task. During the test, the examiners referred to the mistakes made by the participants and the participants were directed to the last correct selection and asked to continue the task from that point. The timing clock used to measure performance time continued even when participants made mistakes. The total time of completion of tasks exceeding 5 minutes was considered to have failed to TMT-B15. [13]

WMS-LM Logical Memory (LM) is the most accurate frequently managed in Wechsler Memory Scale, Fourth Edition (WMS-IV), which is designed to measure verbal occasional memory. The LM sub-version consists of three parts: LM I (instant recall), LM II (late recall), and LM identification (late identification). The LM subtest is a useful and effective measure of occasional memory because it handles three processes involving memory coding, storage and recall. The narrative nature of the recall is also known to be sensitive in detecting cognitive decline in early dementia because prose recall depends on a range of high-level cognitive functions such as occasional memory,

conceptual organization and scheme formation. The LM test is not only useful for distinguishing certain types of dementia such as Alzheimer's Disease (AD) but is also known as a tool that can detect subtle changes in memory in individuals with mild cognitive impairment (MCI). In addition, the LM sub-standard can be used to distinguish between MCI amnesty for natural aging and prediction of conversion to AD from MCI. It is also used to distinguish between AD dementia and non-AD dementia, such as dementia with DLB (Dementia with Lewy Bodies) and VD (Vascular dementia). [14]

The obvious advantage of joint exercise and cognitive training on individual training can be attributed to potential added effects on neurogenesis resulting from initial reproduction developed by the exercise component and survival-enhancing aftereffects resulting from cognitive challenges from the cognitive component. The cognitive component also plays an important role in guiding newly created neurons through activity-based synaptic adaptation of occupational integration in the working brain network leading to permanent positive flexibility changes and improving cognitive functions. The occupational task exercise group showed a significant improvement among the groups in memory.

The knowledge component of the exercise of occupational tasks includes spatial tasks of setting objects and collecting them with specific patterns. Studies have shown that a combination of hippocampus-based exercise and learning tasks such as spatial tasks can enhance the formation of a nervous hippocampus. Therefore, performing spatial tasks in the exercise of occupational tasks can enhance the neurogenesis of the hippocampus, an important brain area for learning and memory, and contribute to improved memory.

Performing this sequence function can increase the cognitive demand to retrieve and process information online while simultaneously maintaining a person's location memory in place and producing a series of target-oriented movements. Successful performance of dynamic sequencing functions in the occupational function process can contribute to improved sequencing capability and thereby enhance the occupational position described in the occupational function exercise package. It was found that the effects of mainstreaming serial training on untrained tasks could be linked to the implicit learning of the unspecified catalytic structure during the process, facilitating prediction in future events. Exercising serial motor functions or serial learning can also activate the hippocampus that is not only associated with learning and memory but also an important area that supports translating the experience aimed at adaptive behavior for successful interactions in the impending future and thus enhancing performance in everyday functions. [7]

Research supporting the use of CST interventions has increased to improve cognitive function in individuals with mild to moderate dementia. Clinical trials exploring the effectiveness of CST have shown a trend towards improved cognition or late deterioration compared to those who do not

receive intervention. The results of this review have shown that this evidence is of a respectable quality. CST is suitable for use by occupational therapists because it is a person-centred approach, compatible with the central values of the profession, which aims to maintain cognitive function in order to enable optimal levels of participation in targeted occupational areas. Cognitive stimulation therapy is suitable for implementation in both community-based and institutional environments.

One of the most thoroughly researched CST software in the UK has been developed by Spector et al. It has been described extensively in a cluster leaders' programme guide. This structured programme includes the implementation of 14 substantive sessions over 7 weeks. Themes of the session include physical games, sounds, childhood memories, food, current affairs, faces, scenes, connecting words, creativity, classification of object, guidance, money management, numbers and word games. This CST software is clinically replicable and supported by relatively high-quality evidence. They have been found to be cost-effective.

Specific neurobiological mechanisms responsible for positive results after CST are not currently well understood. One reasonable explanation may be that cognitive stimulation mediates neurodegeneration and facilitates neuroplasticity. Treatment of memories was found to improve blood flow in the brain, especially the frontal lobe. A similar effect can be observed after person-centred and integrated cognitive stimulation approach. [8]

Occupational therapists view COOK technology as very useful and people with mild cognitive impairment have shown enthusiasm for using the technology in an innovative way to meet their needs, to reduce their responsibilities and cognitive load, the availability and support of family members has been a key facilitator.

COOK's features related to the remote vigilance safety system were those that were cited as favourable and promising. For example, the ability to detect a person's absence in the kitchen and turn off the burner force turned out to be a central measure of participants' interest in COOK. The main barriers presented by participants were mainly related to the knowledge assistance system and the application of electronic tablets: application at all levels needs to be streamlined according to the cognitive and sensory capacities of people with cognitive impairments (AD or MCI) and the financial and logistical capabilities of health institutions. Therefore, in future research projects, it will be necessary to document adjustments to specific features that will be necessary to use COOK to support meal preparation in case of mild cognitive impairment and Alzheimer's disease by conducting usability tests with applied treatments, older people with cognitive impairment and caregivers. The diversity of the clinical setting of participants was one of the contributing factors, as this allowed for in-depth documentation of our assumptions with our clients' profile across the continuum of care. Finally, early saturation of data such as Focus Group III was observed, enhancing the credibility of the results obtained for the four Focus Teams' analysis. [9]

The effect of OCCRP on cognitive function and activities beneficial to daily life was researched IADL (instrumental activities of daily living) and EEG capacity. Programmes focused on life function were found to have a positive impact on cognitive function and ADL related to physical function. In addition, IADL and specific cognitive abilities are investigated using EEG in this study. Cerebral wave examination by Electrical Planning EGG (Electrogastrography) is a non-surgical method that displays occupational changes in the brain and provides different useful data within a short time. OCCRP impact on IADL positively and between cognitive abilities and additional effect on focus was observed.

OCCRP activities that often use patients' hands such as making a photo frame, neck or bracelet stimulated their brain, which in turn enhanced their brain function and improved their cognitive abilities, and improved cognitive ability improved IADL capacity.

The AT index determines the level of concentration as it is the ratio of theta waves that shows a state of sleepiness. It also found that OCCRP is an appropriate intervention through which to improve the concentration and performance capabilities of daily life in patients with mild cognitive impairment. [11]

III. METHODS

Information was collected from scientific articles obtained from several research sites (Academia, Google Scholar), where many metrics were used to determine the degree of cognitive impairment, such as: Allen Scale for cognitive level examination, miniature mental state test, dot binding test part B and measurement of logical memory on Wishler Scale for Memory. A range of therapeutic programs have been implemented, such as realistic orientation therapy, testing and voluntary counselling, one-sided, multi-field, computerized and multimedia intervention. They all showed a significant improvement in cognitive function. Cook's theory is very useful, and the job-centric cognitive rehabilitation program has had a positive impact on cognitive function and cognitive abilities and their focus has improved and their performance ability has improved in their daily life activities.

IV. SUMMARY and CONCLUSION

The effect of occupational therapy is effective in treating memory in the elderly; The moderate cognitive impairment group showed a degree of improvement in the application of these two therapeutic programs (ROT) and VCT. There was also improvement when interventions were made through four types of cognitive intervention: single, multi-field, multi-field, computerized and multimedia intervention, all of which showed a significant improvement in cognitive function.

MMSE scores, class smoothness, TMT-B and WMS-LM improved in the multi-field set compared to active control.

The systematic review conducted in Asia compiled the types of cognitive training available to adults with MCI in

Asia and the impact of their transfer. This review also explored the psychosocial impact of training based on different methods of cognitive intervention. It should be noted that the impact of transport has been significant in unilateral intervention compared to multimodal and multimodal interventions. In general, all kinds of cognitive interventions can produce positive effects after training.

We noted that the exercise of occupational functions using simulated functions as a means of a joint cognitive and exercise programme is possible and useful in improving the memory and functional status of older persons with MCI as well as reducing the care burden on caregivers. The queue control group showed no significant difference compared to cognitive training only and exercise training groups.

We found that cognitive stimulus therapy is a supportive and occupationally oriented strategy aimed at enabling individuals with mild to moderate dementia to remain meaningfully engaged in their lives and surroundings. We have ensured that occupational therapists are well suited to the implementation of CST because it corresponds to the important values and objectives of the profession. As a result, CST may provide a useful basis for building multidimensional programs and care plans for individuals with mild to moderate dementia.

We noted that COOK has good potential to support the autonomy and safety of older people with cognitive impairment when preparing meals. This technology applies particularly to people with mild cognitive impairment, because these populations have better educational abilities.

Occupational therapists have the potential to make valuable contributions to future CST research and programme development

V. SEARCH TERMS

AD	Alzheimer Disease
MCI	mild cognitive impairment
CST	cognitive stimulation therapy
OCCRP	occupation-centered cognitive rehabilitation program
ROT	Reality Orientation Therapy
VCT	Voluntary Conceling & Testing
ACLs	Allen Cognitive level screen
MMSE	Mini-Mental State Examination
TMT-B	Trail Making Test part B
WMS-LM	Wechsler Memory Scale Logical Memory
DLB	Dementia with Lewy Bodies
VD	Vascular dementia
IADL	instrumental activities of daily living
ADL	activities of daily living
EGG	Electrogastrography

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