

# A Review on Therapies and Treatments for Cognitive Inabilities

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## Abstract

The prevalence of Dementia, a cognitive brain dysfunction which comprises Alzheimer's and Parkinson's diseases is widespread irrespective of age, sex and geography. The loss in neuro transmission due to a fault in synapses in neurons lead to dementia and is an arduous task for identification. These chronic illnesses directly influence the lifestyle of the patients and hence early diagnosis & treatments through medications and paramedical therapies provide relief on the stress faced by healthcare infrastructure and the care takers. This review identifies and disseminates the clinical features and consequences of dementia, different radiological techniques to assess the extent of brain disorder. Finally, the importance of non-pharmaceutical therapies on treating dementia is emphasized.

## 1. Introduction

Dementia refers to a syndrome when there is deterioration in memory, diminished ability to involve in multitask, behavior, thinking and the ability to perform day-to-day tasks. It is not a specific disease as usually perceived by the common people, it is identified as a group of clinical conditions that are caused by impairment of brain functions such as thinking, memory loss and social disabilities. Dementia occurs when the part of the brain that is responsible for learning, decision making and memory are damaged or diseased. Degenerative neurological diseases such as Alzheimer's disease and Parkinson's disease are a part of dementia [1].

**Alzheimer's disease:** Alzheimer's is one of the most common forms of dementia which is prevalent among the old people. It is a degeneration of the brain that is irreversible which causes disruptions of memory, cognition and other functions that might eventually lead to death due to complete brain failure. The symptoms vary according to the people and the area of the brain infected. The risk includes brain injury, diabetes, diet, activity, smoking, and other medical, genetic and environmental factors that contribute the development of the disease [2]. Accumulation of beta-amyloid plaques between the neurons in the brain and neurofibrillary tangles that are twisted fibers which are found inside the brain serves as a cause of Alzheimer's disease. Tau is the protein that is primarily found in the tangle.

**Parkinson's disease:** Parkinson's diagnosis involves, when a person shows symptoms such as bradykinesia, muscle rigidity and tremor while at rest. Other associated signs include expressionless face, quite speech, shuffled gait, cramped handwriting, trouble getting out of chair and difficulty swallowing [3]. When nerve cells that is responsible for producing dopamine in the brain begins to die, most of the symptoms of parkinson's disease occurs.

When the causes remain unknown, the condition is called idiopathic. But few cases are involved poisoning due to number of pesticides, carbon monoxide and manganese, and injury trauma and highly complex PD-like neurological disorders such as multiple system atrophy and reversible toxic medication [4].  $\alpha$  – syncline is responsible for proteinopathy in Parkinson's disease. The expression level of this protein and its aggregation is modulated by reactive oxygen radicals and transition metal ions. The histopathology of the brain most important characteristic feature [5].

### 1.1 Consequences of Alzheimer's and Parkinson's disease

Both Alzheimer's and Parkinson's disease may lead to psychotic symptoms that are delusions and hallucinations. They impact the brain and its progress in multiple ways. As the disease progresses, disorientation, agitation, confusion, paranoid ideas, hallucinations, impulsivity, inability to concentrate and think can also progress. In the view of behavioral symptoms, apathy and depression are major side effects. The depression evolved from this can often be suppressed with the aid of medications and is responsive to anti- depressant drugs. Anxiety is another major behavioral symptom and lowering the anti- depression medication may help stay away from the side effects [6].

Psychotic symptoms such as hallucinations and delusions can occur in both cases. Any infection or medical condition might indicate delirium. Additional side effects of these medications at higher doses have the bigger chances of inducing hallucination and paranoid ideas. The quality of sleep can be found to diminish in both the diseases. The patients are often found to have rapid eye movement in sleep, short and fragmented sleep and other behavioral disorders. The sleep disorders can often be overcome by administration of clonazepam medication but it is usually prohibited due to its side effects. A combination of movement and cognitive functions can lead to Lewy body dementia, making it harder for the patients to analyze and rationalize and their ability to take a decision [7].

### 1.2 Clinical features

Various kinds of dementia are prevalent all over the world. However, same types of pathophysiological changes are known to cause these motor symptoms. The clinical features of Alzheimer's and Parkinson's disease are significantly different from each other. They mainly involve in secondary impairments, executive functions and visuospatial functions. It has been revealed in a study that the patients also suffered a superimposition of subcortical deficits [8]. A dementia rating scale can be used to study Lewy bodies, progressive supranuclear palsy that can be compared and the differences are analysed to study the variations in cognitive deficits. It is also suggested that dementia rating scale cannot distinguish and discriminate the type of memory impairment.

### 1.3 Prevalence and incidence

For Alzheimer's disease, it is demonstrated by the epidemiological evidences that the depression is one of the common causes. Around 30-50% of the patients affected with AD are known to be encountered with depression. In small scale clinical samples, more clinically prevalent and exact specific instruments are used, whereas in the large scale studies, less sensitive self-reports are found to occur. Additionally, when there is a referral bias toward depression, the prevalence of it might be overestimated in clinical samples. Any deviation in the ascertainment might lead to variability in the depression rate. Irrespective of the severity, patient's addressing of the depression is affected in AD and the care givers might provide the incorrect details that might elucidate the test results. The manner in which the studies relate the symptoms can affect the prevalence. Examples include reporting of apathy or agitation that arises from the dementia that are associated with depression. It should be noted that the awareness of dementia do not appear to be associated with depression risk and there is no observed consistency between the severity and risk.

A detailed study of the patients suffering from the conditions and their caretakers estimated that the 51% patients were found depressed out of which, 30% was prevalence rate in women. Estimations from the small samples revealed that the criteria for major depression was 15.4% and 23.1% for minor depression. It is also revealed that in a study from two huge databases, that had retrospective application for the major depression, that in an average of 3 years, 1.5% incidence were observed and in a span of 3 years, 1.3% of incidence were observed. Analysis of the prevalence of depression in AD in various ethnic minority samples was found to range from 3.5% - 39.6%. [9]

A door to door or population based random sampling is proved to be a robust approach in analyzing the prevalence of Parkinson's disease. It includes the patients who have not approached for the medical help and who do not have proper access to medical care and thus believed to be more suitable for internal studies. In a study for the geographical prevalence, 47 different reports were included, out of which 21 were done in Asia, 5 in Africa, 11 in Europe, 2 in North America, 4 in Australia and 4 in South America [10]. Most of the studies used a two-stage procedure to examine individuals with PD. In stage 1, screening questionnaires were given to the neglect symptoms. Individuals who marked positive in stage 1 were examined by a neurologist to affirm the presence of the disease in stage 2.

Prevalence of PD by age and geographic location, has revealed that individuals of 70 to 79 years of age in Asia had a significantly lower prevalence of PD (646 per 100,000) compared with individuals of the same age in Europe, North America, and Australia (1,602 per 100,000;  $P < 0.05$ ). In most of the age groups, a very slight and insignificant male preponderance was found to be present. And no significance in sex was found to prevail, though in Asia, the prevalence was found to be equal between both the genders [11]. A number of intriguing differences in prevalence rates was found to be observed which highlighted the inclusion criteria of the studies such as age, sex and geographical locations. It was also understood that due to the sensitivity of the analysis, prevalence estimates were affected. However, with higher quality studies and narrow confidence levels, precise data analysis could be extracted.

## 2. Imaging techniques and biomarkers

Imaging biomarkers are described as "a characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes, or pharmacological responses to a therapeutic intervention". This

marks a major emphasis on the biomarkers as a tool to analyze the biological condition. The imaging method is considered to be a measurable variable that serves as an indicator for pathological and biological process [12]. In Parkinson's disease, magnetic resonance imaging creates images of brain tissues with the help of excessive hydrogen atoms and strong magnetic fields. Usually, the MRI uses characteristically significant pulse sequences to gather susceptibility-weighted scans, fluid-attenuated inversion recovery, protein density weighted, T1 and T2-weighted scans. Due to the iron accumulation, slow venous flow, hemorrhages, these imaging techniques are susceptible to inhomogeneous magnetic effects thus in turn allows for an elevated tissue contrast. The obtained images can be analyzed either in singular or in combination to gather the structures of brain in volumes and cortical regional thickness and helps in the identification of local tissue abnormalities. In the biomarker point of view, rates of atrophy, structural profiles that includes patterns are important areas of research [13].

The sequences that are required to assess a patient are as follows

1. Fast spoiled gradient echo, that produces 3D volumetric T1 weighted images, GRE obtained by magnetization rapid acquisition and other similar imaging sequences are produced using reformatting software. The degree of atrophy, internal structure and the anatomy can be assessed by this sequence.
2. T2 weighted images
3. FLAIR Sequence. (Fluid-attenuated inversion recovery)
4. There are other available sequences that can provide more valuable information such as Gradient echo, Susceptibility weighted imaging and diffusion weighted imaging, which can detect the minor bleeds, vascular amyloid pathology that can play a prominent role in the diagnostics and finds therapeutic applications in anti-amyloid treatment. Other pathologies such as vascularity and Creutzfeldt-Jakob disease which are the cause of sub-acute cognitive impairment cannot be significantly analyzed by diffusion weighted images.

Other functional imaging techniques includes positron emission tomography (PET), coupled with variety of tracers, functional MRI (fMRI), MR spectroscopy (MRS), diffusion tensor imaging (DTI), single photon emission computed tomography (SPECT) and arterial spin labeling (ASL) but they are not yet used in routine clinical settings. Well established methods such as amyloid PET, SPECT, and F-fluorodeoxyglucose (F-FDG) are widely used. The availability of the facilities and expertise determines the utility and functionality of these techniques. In general they can be used together or alone for structural imaging and examination [14].

Non-invasive MRI is used for measuring the concentration of chemicals such as choline, myo-inositol, N-acetyl aspartate and glutamate plus glutamine and creatine, which are commonly analyzed compounds and other biomarkers are represented in Figure 1. For different pathological process such as glial proliferation, inflammatory changes and loss of membrane integrity, brain metabolites functions as surrogates and MRS helps in detection of early metabolic changes in the Alzheimer's disease [15].

Using the magnetically labeled arterial blood water protons, tissue perfusion is measured which helps in non-invasive MRI detection. It is evident that the hypo perfusion of the Alzheimer's disease begins to show well before the clinical symptoms starts to appear. Glucose metabolism and reduction in perfusion are highly co-related. Other abnormalities precede vascular dysfunction and are present before A $\beta$  aggregation.

Any spontaneous low frequency fluctuations in blood-oxygen level dependent signal can be focused by RS-fMRI. When the meta analyses were performed, patients showed different levels of hypo activity in the brain and visual network shows low activity in patients. The neuronal network pattern dysfunction may be a consequence of disease proliferation.

The brain metabolism can be detected by Proton MR Spectroscopy through analysis of detection and signaling small change in proton from certain significant molecules that are present in the brain, by altering the resonance frequency by milieu, which is a surrounding chemical [15].

In T2 weighted or fluid attenuated inverted recovery sequences, white matter hyperintensities, which are high signal intensity can be sequenced. They are usually found to be associated with older age, hypertension, smoking and hypercholesterolaemia. Numerous other methods of quantifying the white matter hyperintensity and their location can also be detected. But White matter damage and disruption of cortical, subcortical tracts and cortical-cortical tracts have a huge impact on motor and cognitive functions in Parkinson's disease.

The detailed patterns of both grey and white matter disruption might occur at any stages of AD and PD, and can be easily detected with imaging techniques. Any metabolic and functional changes can also be recorded. Longitudinal atrophy and diffusion changes specific to these diseases can be established through rigorous evaluation of software analysis.

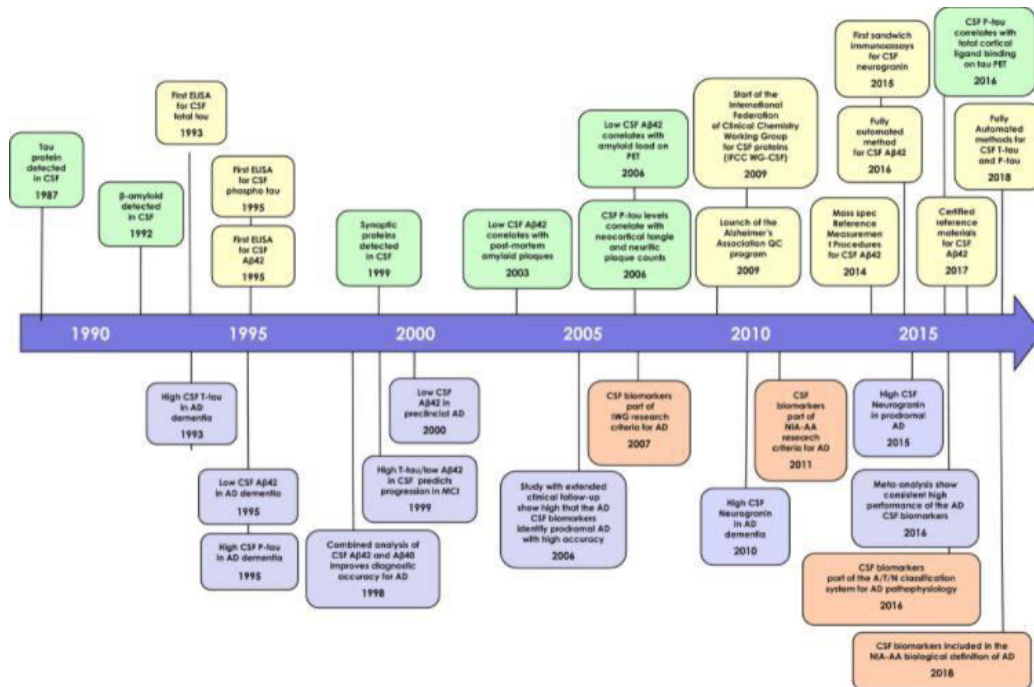


Figure 1: Identification of Biomarkers for Dementia reproduced with permission from [16]

## 2.1 Administration of drugs

### 2.1.1 Cholinesterase inhibitors

From the neuropathological and imaging studies of Alzheimer's disease and Parkinson's disease patients, significant number of cholinergic deficits were observed, and it was found to be more dominant in Parkinson's rather than Alzheimer's with same level of cognitive impairment effects. The defect is usually observed in the hippocampus area of the AD patients, whereas in the case of PD case, they are usually seen in basal forebrain and also in the stem of the brain. In both the cases, a significant reduction in activity of cortical cholinergic effect is observed, and such defects can be correlated to treat memory impairments by the administration of CHEIs, and very good emphasis has been laid to investigate the efficacy of the drug [17 – 19].

Rivastigmine, Donepezil and galantamine have been observed to be efficient in enhancing the cognitive function in the patients with medium AD. It is observed to be safe and tolerated with small amounts of side effects such as diarrhea, vomiting and nausea. However, prevention of dementia with the help of this drug has not found to occur [19].

For the symptomatic treatment of medium level of AD, Rivastigmine has been found effective and approved. The dominant cholinesterase region and butyrylcholinesterase (BuChE) in AD, PD were found to be inhibited by the drug in the key regions such as thalamic nuclei, hippocampus and amygdala. The highest dose of medication was found to be very effective [19].

A highly reversible and selective inhibitor of AChE is donepezil, that helps in delaying the breakdown of acetylcholine that is released in synaptic cleft region and hence helping in cholinergic transmission. The most common side effects involved are nausea, giddiness and vomiting [19].

Another common drug which is administered to ChEI is galantamine, which inhibits butyrylcholinesterase and binding to nicotinic acetylcholine receptors in order to moderate ligand actions. The adverse effects include symptoms of moderate gastrointestinal troubles [20].

### 2.1.2 N-Methyl D-Aspartate [NMDA] Receptor Antagonist

The modulation of glutamatergic neuronal transmission and blocking of hyperactive glutamatergic activities and its effects are suppressed by memantine. For moderate to severe dementia and in AD, memantine has been approved for the treatment. Confusion, dizziness and headache are the commonly reported side-effects [21].

## 3. Rehabilitation

Rehabilitation of the affected patients includes physical therapy, speech and language therapy, interventions such as psychological and educational, occupational therapy and other multidisciplinary approaches.

### 3.1 Physical Therapy

The main effects of the AD and PD are resting tremor, postural instability, extrapyramidal rigidity, amimia, altered posture reflexes, sensory disorders, impaired balance, sleep, speech, swallowing disorders and autonomic disorders. Postural fixation and recovering balance are the utmost need in advanced stages of the disease. With progression of the disease, there is a reduction in the axial manifestation that includes changes in the postural reflexes, dysarthria, freezing, hypophonia and dysphagia. One of the most important adjuncts in addition to the already existing neurosurgical and pharmacological treatments are the physical therapy. It is notable that most of the neurosurgical and pharmacological approaches are able to reduce the effects such as freezing, rigidity and bradykinesia, but not completely eliminate them. Non-dopaminergic effects such as lack of balance and resulting falling could not be completely overcome by the pharmacological treatments. Hence, physical therapy such as regular physical exercises are recommended and warranted for the most patients with AD and PD [22].

The major goal of the physical therapy is to increase the functional ability and reduce the secondary complications by the help of movements. This type of rehabilitation is usually managed by a team of professionals to address both cognitive and physical problems associated with the disease. The functional limitation includes activities such as walking, climbing, stair climbing, grasping, reaching and other disabilities. The disabilities includes social activities, mobility exercises, sports, and gait training. The major goal to overcome the functional limitation and disabilities involves educating the patients and their relatives about the benefits of physical activities.

Aerobic physical exercises are considered as a feasible and practical for the AD patients. Even a simple act of walking and running can lead to a reduced decline in cognitive performance in AD. Further it also improves the posture, and other motor neuronal functions in the patients [23]. In addition to the cognitive functions, breaking down the complex movements into step by step, such as bending the knees, moving the arms, will improve the manual dexterity, focus and gait. Strength training and multicomponent exercise such as aerobic exercise, power, muscle strength, co-ordination exercises are proven to provide improved health benefits. The effects of physical exercises are further seen to be improved by the environmental factors. For instance, walking with a company has shown better effects than walking alone, because the conversation, while walking with a company builds socialization effect. In another experiment, it has been observed that walking in the bright lights furthered the benefits. For instance, a study showed that neurogenesis can be improved by increasing the blood flow in the cerebral region, hippocampus were elevated by physical activities such as treadmill, cycling, for forty minutes a day, for four days in a week, for 12 week. In older healthy samples, the exercise leads to increase in plasma concentration of BDNF (brain derived neurotrophic factor). Additionally, processing speed, sustained attention and mental flexibility seemed to be strengthened. However, stretching and toning exercises did not elevate the cortical improvements.

It is also found that the plasticity of the brain can be improved by physical education. In another study, done on mice model, it is observed that the hippocampus volume was improved in the subjects that ran an hour per day, for 5 days a week, for 16 weeks than their non-exercising counterparts. This hippocampal neurogenesis improves spatial memory, learning abilities. The risk of developing AD and PD can be reduced by high intensity activities such as tennis and cycling. The risk is high in the professionals such as teachers, state employees and doctors who lead a sedentary lifestyle than the professionals such as mechanics and construction workers. The cognitive performances i.e. attentional capabilities, mood state, depression and anxiety are almost non-existent in the subjects that followed physical therapy. Synaptic connections of the neuronal network are found to be improved from neoplastic mechanisms which are effect of the physical exercise. The alteration of the dopaminergic neurons in the substantia nigra is reduced by physical exercise and reconstitutes the basal ganglia, thus improving the glutamate and dopamine neurotransmission. Glial fibrillary acidic protein in the dorsal striatum can be restored by aerobic training, thus indicating that astrocytes are improved by exercise in diseased subjects [24]. Further the dendritic length, dendritic spine density and complexity within the hippocampus are improved which down regulates the genes that are linked to the oxidative stress. The brain amyloid concentrations are significantly reduced as an effect of exercise that improved object recognition.

However the limitations and obstacles to physical therapy often involves in failure of the patients to take part in training sessions due to scheduling challenges, commuting issues, medical comorbidities, hospitalization, family issues and musculoskeletal injuries. Additionally, the cost of personal trainers and physical therapy might prohibit the patients from undertaking the supervised exercise. It is fundamentally encouraged by the physicians to adhere to independently initiated exercise to the patients.

### 3.2 Occupational therapy

A multidisciplinary plan including occupational therapy is often suggested for the patients with Alzheimer's disease and Parkinson's disease. It involves in phased medical approach. The major goal of the occupational therapy is to improve maintain, restore the engagement and activities within residence and in community that are beneficial to the

individual. This further improves the quality and overall functionality of life. Self-care, hobbies, and work are maintained by the patients with the help of occupational therapist. When it turns out that the self-care and maintenance can no longer be kept up by the patients, the therapists suggest and teach them how to change and adapt to their roles. These strategies applied by an occupational therapists are much similar to the strategies applied to the patients with acquired brain injury such as strategies for planning, problem solving and time pressure management. Despite the impairment, most of the patients' needs to feel reduced stress, disability and an overall improvement in their quality of life [22]. In order to achieve this, cognitive and movement strategies are combined to battle the inabilities. Few of the alterations and changes that are employed by the occupational therapists include:

- Simplifying day to day tasks
- Altering the nature, duration and time of the activity
- Streamlining and simplifying the complex activities into small and easy tasks.
- Providing proper aids to patients

The interventions from the occupational therapist often includes, organizing and reorganizing the day to day activities, providing and advising to use specialized equipment and resources and learning new skills for adaptive and alternative ways to carry out the activities. The occupational therapist may offer a range of modified assisting devices for the physical environment. The most commonly used devices and modifications comprises of optimized height, workspace and improved light conditions. The occupational therapy will also provide overall assessment, recommendations and treatment for the following areas with the help of diagnostic results, treatment plan and treatment goal.

- Computer modifications
- Eating and cookware adaptations
- Energy saving aids
- Vehicle modification and driver evaluation
- Hand and arm therapy
- House modification information
- Work place equipment modifications
- Manual or electric chair use
- Bath tub and toilet equipment use
- Dressing and grooming aids

These interventions and modifications has received considerable attention in the general population of elderly. Particularly, Occupational therapy has been found to be effective in decreasing falls in elderly patients. The core principle of the occupational therapy lies in productive occupation that is everything that the person requires or needs to do and whatever they have to do. Thus the therapy is often tailor-made, suited for individual needs. Usually, patients are suggested to an occupational therapy in the final stages of AD and PD, when they face significant level of disability. However referral to an occupational therapist can be done at initial stages of the diagnosis, and annual view and reviews are considered to be the best practice. The therapist often believes that it is important to address the social and psychological aspects of the disease. Usually, four major roles are suggested for the therapist and they are problem solver, educator, network and support. The frame work for the intervention in patients involves in three significant stages such as goal setting, activity analysis, enhancing the performance by improving the skills, increasing knowledge to modify the task, thus elevating support performance, modifying the attitude and expectations [25]. The occupation therapy interventions are often aimed at changing perspectives and aspects of the patient. They are designed to accommodate the concerns of the patient and caregiver. As the disease progresses, the priority also shifts.

Through the analysis and comparison of diverse range of interventions, the improvement of the quality of life was found to be the most prominent outcome of the therapy sessions [24]. The effectiveness of environmental adaptations and interventions has not yet been explored extensively in PD. However, there are few evidences proving that individually tailored home based intervention is effective on the patients. The key to fruitful occupation therapy interventions are promoting relationships, increased and effective social participation, and enhancing function. Additionally, providing knowledge, strength and support to the care takers, family and clients will ensure the patients with the strength and support to overcome the disabilities and improve their quality of life.

### 3.3 Speech and Language therapy

Speech problems are more common in the patients suffering from Alzheimer's disease and Parkinson's disease and it is more pronounced with the progression of the disease. The group of speech disorders that results from the deviations and disturbances in the muscular control, due to the damage in central nervous system is termed as dysarthria. It originates problem due to weakness and paralysis. Monotony of volume and pitch, imprecise

articulation, reduced stress, breathy hoarseness and variations in speed are the most common characteristics of dysarthria.

The patient with AD and PD usually suffer from cognitive dysfunction which then causes difficulties in language understanding, selection, co-ordination and comparison. There are four main approaches available for the speech therapy which are as follows:

- Behavioral treatment techniques such as drill and exercises
- Usage of instrumental aids that includes prosthetic and augmentative devices
- Administration of medications
- Surgical procedures.

In later stages of the diseases, the pharmacological treatments and surgery can only play a limited role in managing the motor impairments such as speech disorders. Implement of behavioral treatment technique such as speech and language therapy is found to be more effective. Even then only the compensated intelligibility is achieved in most cases than the normal speech, which serves as a limitation of the therapy [26].

Immediately after the diagnosis, a detailed analysis of the everyday challenges of the individual suffering from either AD or PD is obtained. The struggles include but not limited to

- Short term memory loss,
- Denial
- Depression
- Paranoia
- Repetitive questioning
- Challenges in sleep pattern
- Changes in smell
- Changes in taste

The patient battling with early stage of dementia might also experience hardness in executive function, word retrieval and semantic memory. The speech language pathologist mainly focuses and lays the emphasis on working memory, because it is considered as the person's learning ability. To access them, the SLP uses a combination of tools and subtests which evaluate immediate and delayed recognition. The pathologist then interprets the results obtained from the subtests that are related to the hierarchy in the cognitions. To retain the auditory and visual information a minimum extent of recollection is required. It is mandatory to incorporate the indicators such as communicative and cognitive evaluations, to complete the instrumental activities in daily life. Memory for basic and automatic activities, motor routines, a memory for how the task is performed are collectively called as procedural memory and it must be assessed in the patients suffering from dementia. Driving a car, or a bike, writing, brushing, washing the dishes, typing a shoe, buttoning a shirt, playing violin are some of the examples of such kind of memory. A person who has procedural memory may play and win a game, but still wouldn't be able to name the game or tell how to play.

In the early stages of dementia, there are avenues for some new learning abilities with the patients. Incorporation of traditional and cognitive treatment, compensatory techniques may accelerate the new learning ability. The treatment may be comprised of incorporation of few instrumental activities, into the everyday lives of the patient such as scheduling appointment, shopping, money management, finding a way, using a phone, tablets, listening to a radio, watching a sport, fixing a machine and reading newspapers.

Spaced retrieval techniques shall be implemented which are important for early stages of dementia. This technique is employed to attain goals to learn daily activities, swallowing, making a meal, choosing weather- appropriate cloths, equipment and ambulance devices and safety precautions. This reduces behaviors such as dependency, asking repetitive questions and doubts, and reduces anxiety. Further techniques employed include reality orientation, association, rehearsal, repetition and visual imagery. The SLP may additionally assist in driving, employment and holiday routines.

In the later stages of dementia, general communication is lost due to the severity of changes in the brain matter, the patients completely rely on the care takers and family for the simplest tasks. The speech and language therapy may maintain quality of life in the final stages of dementia by facilitating verbal and non-verbal communications and expressions. All of the mentioned implementation can help the patient to adapt and overcome the changes to maintain the quality of life throughout all stages of dementia [27].

#### **4. Conclusion**

The purpose of this review is to assimilate therapies and treatment suitable for overcoming the cognitive inability of dementia patients. The discussions in this report revealed the credibility of paramedical therapies over the administration of drugs to improve the quality of life. A series of drugs are administrated to improve the spatial

memory. However physical, occupational, language and speech therapy improved their motor and social skills which reflected in confident behavior. Yet, care and affection by the caretakers and physiologists are intended to be the only treatment for the wellbeing for dementia patients.

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