



Dementia Among Elderly Individuals in England and Evaluation of effectiveness of Cognitive Stimulating Therapy (CST) in improving their quality of Life

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I. INTRODUCTION

Dementia is a debilitating disease that affects the lives of many people living in London. It is a progressive disease that affects a person's memory, thinking, language, judgment, and behaviour. Dementia can cause significant cognitive changes affecting daily life, making it difficult for those affected to carry on with normal routine activities. The prevalence of dementia in London is increasing yearly, with an estimated one-third of people over 65 having some form of dementia (Orfanos et al., 2021). This is a cause for concern and a challenge for London's health services, as the population is ageing rapidly. With the right support and care, however, those living with dementia can live fulfilling lives. According to World Health Organization, Dementia is a syndrome in which there is deterioration in the brain's cognitive function beyond what might be expected from the usual consequences of biological ageing. Dementia is a progressive disease, meaning that it gets worse over time. The problem within the brain starts from the nerve cells (neurons), which are damaged and eventually die (Lobbia et al., 2018). The nerve cells transmit electrical impulses and chemical signals to transmit information between the brain and the rest of the nervous system. The disruption in sending messages from the brain to other body parts starts with memory problems.

People with Dementia present problems with the following:

- Remembering things
- Being depressed
- Daily activities like bathing, getting dressed, cooking, etc
- Communicating
- Wandering or getting lost or confused about their location.

There are many different types of dementia. The common types of Dementia are:

1. **Alzheimer's disease:** Alzheimer's is the most common type of dementia, accounting for two third of all dementia cases in the UK. The

symptoms start with short-term memory loss that progresses to more severe forms, causing confusion, disorientation, personality changes, and difficulty speaking (James & Bennett., 2019). Alzheimer's disease interferes with the normal structure of the brain and forms abnormal protein beta-amyloids, which disrupt cell functioning. Another protein called 'tau', which forms neurofibrillary tangles due to chemical changes in the brain, blocks the regular neuron transport system.

2. **Vascular dementia:** Vascular dementia is the second most common form of dementia. It is caused by reduced blood flow to the brain, which ultimately damages the brain cells (Becker et al., 2018). The symptoms of vascular dementia vary according to the brain affected but generally include memory loss, difficulty concentrating, and the ability to make decisions and plans.
3. **Frontotemporal dementia (FTD):** Frontotemporal dementia (FTD) primarily affects the frontal and temporal lobes of the brain, which are generally responsible for personality, behaviour, and language (Panza et al., 2020). Frontotemporal dementia tends to develop slowly and worsen over time, like other forms of dementia. The brain cells in FTD die over time due to the abnormal accumulation of proteins blocking the nerve pathways.
4. **Lewy body dementia:** Lewy body dementia, also known as dementia with Lewy bodies (DLB), is caused by abnormal aggregation of proteins known as Lewy bodies (Sanford, 2018). Lewy body dementia shares common symptoms with Alzheimer's disease and Parkinson's disease, such as problems with thinking, body movements, and issues with behaviour.

Prevalence of Dementia

Dementia affects an estimated 5 to 8 percent of people over age 65. As the population ages, the prevalence of dementia is expected to increase significantly. The exact cause of dementia is unknown, but it is believed to be related to age-



related degenerative changes in the brain. Other risk factors include genetics, lifestyle choices, and medical conditions such as stroke, Alzheimer's disease, and Parkinson's disease.

- The World Health Organization (WHO) has estimated that around 50 million people worldwide live with dementia, and 10 million new cases are coming up every year.
- A London School of Economics survey estimated that in 2019, there were almost 885,000 older people (aged 65 years and over) living with dementia in the UK. It was also expected that the number might increase to almost 1.6 million as life expectancy increases.
- The prevalence rate of dementia among older people in the UK is estimated to be 7.1% (Wittenberg, 2019).
- Of people living in the UK with dementia, it is estimated that 511,000 have severe dementia. (Alzheimer's Society, 2014; Wittenberg, 2019; Alzheimer's Society, 2020)

Determinants of Dementia

According to (WHO,2017), the various determinants of Health include:

1. The Social and Economic Environment.
2. The Physical Environment.
3. Individual Characteristics and behaviours

The other determinants which affect a person's Health are education, employment, occupation, and medical conditions.

Dementia can affect anybody and any gender, but some people are more likely to develop dementia. If we take age as the risk factor for dementia, the risk increases with age. Some risk factors, like genes and age, cannot be changed, but many others, such as lifestyle factors, pollution, and cognitive reserve, can be managed with proper support.

The important risk factors of dementia are :

- **Genes:** Research has shown that some genes increase the possibility of dementia. The two genes associated with Dementia are known as 'Familial genes' and 'Risk genes.' The familial genes cause dementia when passed from parent to child, whereas 'Risk genes' only increase the person's possibility of developing dementia. The most important gene associated with dementia is Apolipoprotein E (APOE). The APOE gene is most commonly associated with Alzheimer's disease. This gene is responsible for carrying cholesterol and fat in the bloodstream. The problem with

the brain cells processing fats and lipids plays a crucial role in the aetiology of Alzheimer's disease.

- **Ageing:** Ageing is one of the important risk factors for dementia, as dementia takes a long time to affect the brain cells. An older person is likely to suffer many medical conditions, such as high blood pressure, stress, and a weaker immune system. According to the report published by NHS, one in 14 people over the age of 65 have dementia in the UK, and the condition affects 1 in 6 people over the age of 80. Older people start experiencing problems with their memory as age advances. Still, in Dementia, the memory loss is severe, and the person finds it difficult to adjust to their normal daily routines.
- **Cognitive Reserve:** The ability to maintain cognition despite neuropathological changes in the brain is known as Cognitive Reserve. Good Education, Occupation, and social activities are crucial for a healthy cognitive reserve. The concept of Cognitive Reserve suggests that the brain actively tries to deal with brain damage by utilizing existing cognitive processing strategies. As a result, a person with a high cognitive reserve will be able to handle brain damage better than a person with a low cognitive reserve.
- **Gender:** According to the research done by Alzheimer's society, Women are more likely to suffer from dementia than men. This is because women are more likely to live longer than men. A study done in Taiwan found that one's chances of developing Alzheimer's disease over seven years were more significant in females. A meta-analysis examining the incidence of Alzheimer's disease in Europe found that approximately 13 women out of 1000 developed Alzheimer's disease each year compared to seven men. There is sufficient data from previous studies which support that dementia rates are higher in females.

Many other factors such as Smoking, air pollution, brain injuries and cardiovascular diseases, are associated with the risk of dementia.

Interventions for Dementia

There are various evidence-based interventions to improve the quality of life for people with Dementia. Currently, there is no permanent cure for dementia. Broadly, there are two types of interventions for dementia:



1. Pharmacological Interventions: According to (NHS,2020), the main medicines available today are Acetylcholinesterase and Memantine. These medications can help improve cognitive functioning and behaviour and reduce the risk of further cognitive decline. Commonly used medications for dementia include cholinesterase inhibitors, memantine, antipsychotics, and antidepressants. Cholinesterase inhibitors help to increase the action of the neurotransmitter acetylcholine, which plays an important role in memory and learning. Memantine blocks the effects of NMDA receptors, which are involved in forming memories. Antipsychotics and antidepressants can help to regulate mood, reduce agitation, and improve sleep. These medicines are associated with many side effects, such as headache, nausea, diarrhoea, and shortness of breath in signals. Antidepressants are given when depression is suspected as the cause of anxiety.

2. Non-Pharmacological

Interventions: Nonpharmacological interventions are strategies used to help manage dementia symptoms without medication. These strategies can include changes to the person's environment, activities, and lifestyle that can help reduce agitation, anxiety, depression, and other issues associated with dementia. According to several studies (Yury and Fisher,2007; Brodaty and Arasaratnam,2012; Schneider et al., 2006a), nonpharmacological approaches may be more effective than pharmacological therapies. They also seem to have fewer side effects. (Abraha et al., 2017) Examples of nonpharmacological interventions for dementia include:

1. Cognitive stimulation: Cognitive stimulation activities are designed to help the person with dementia stay mentally active and engaged. Examples include word games, puzzles, and memory exercises.
2. Physical exercise: Physical exercise can help improve muscle strength, coordination, and balance, as well as reduce stress. It can also help the person with dementia to stay physically active and engaged.
3. Social activities: Social activities such as group outings and recreational activities can help reduce boredom, depression, and anxiety.
4. Music and art therapy: Music and art therapy can help to reduce agitation and improve mood.

5. Nutrition and sleep: Eating a healthy diet and getting enough sleep can help the person with dementia stay healthy and reduce symptoms.
6. Occupational therapy: Occupational therapy can help the person with dementia to stay physically active and engaged.
7. Home safety: Make sure the home environment is safe for individuals with dementia.

In this report, we have identified various determinants of Dementia and the various interventions to improve the quality of life for people living with dementia. We are going to focus on the **Cognitive Reserve** of the Brain. Good cognitive reserve is essential in dealing with degenerative changes in the brain.

Aim of The Intervention

- To improve the Cognitive Functioning of the brain in individuals with mild to moderate dementia with Cognitive Stimulation Therapy (CST)

Objectives

This intervention involves various activities, such as problem-solving, memory games, music, art, and discussion, all designed to stimulate the brain and help improve cognition. The primary objectives of CST include:

- Enhancing cognitive abilities and executive functioning, such as memory, attention, language, problem-solving, and planning.
- Enhancing quality of life by providing meaningful activities and social interaction for people with dementia.
- Reducing behavioural and psychological symptoms of dementia (BPSD) and providing a safe environment for managing challenging behaviours.
- Offering the opportunity for meaningful social interaction, reducing feelings of isolation, and providing emotional support for people with dementia.
- Increasing knowledge about dementia and providing education about it for both people with dementia and their families.
- Improving communication and self-expression by encouraging the use of language and providing a safe space for people with dementia to talk about their experiences

Intervention

Cognitive Stimulation Therapy (CST) is a nonpharmacological intervention for people with dementia. CST is a structured, group-based therapy



that focuses on improving the cognitive functioning of individuals living with dementia. CST aims to enhance individuals' cognitive abilities and help them maintain their cognitive function for as long as possible (Gibbor et al., 2021). CST is designed to promote and maintain cognitive function while providing a social component to the intervention. Sessions typically last between one and two hours and involve eight to twelve participants. During the session, participants are encouraged to engage in activities and discussions designed to stimulate their memory, problem-solving, and reasoning skills. These activities may include word and number games, quizzes, sorting objects into categories, and completing puzzles (Gibbor et al., 2021). The goal is to provide a stimulating environment that encourages the participants to interact with one another and practice the skills necessary to maintain their cognitive abilities. CST is also designed to be enjoyable and engaging. Music, art, and storytelling are often used to make the sessions more enjoyable and help participants remember their completed activities.

In London, CST is being implemented in various settings, including inpatient units, residential and nursing homes, day centres, and the community. A recent study in London found that CST was associated with improvements in cognitive function and quality of life in people with mild to moderate dementia (Orfanos et al., 2021). The study also found that those who received CST had significantly higher scores on a range of cognitive tests than those who did not receive CST. Currently, there has been an increasing focus on providing dementia care that is tailored to the individual. This has included the implementation of Cognitive Stimulation Therapy (CST). Recent research has shown that CST can positively affect people with dementia, such as improved cognition, quality of life, and self-efficacy. A study conducted in 2017 found that CST effectively improved cognition in people living with mild to moderate dementia in London. The study found that participants had an average improvement in cognitive scores of 6.9 points (Orfanos et al., 2021). This improvement was seen after just 12 weeks of CST, demonstrating the efficacy of this intervention in London. Additionally, a study conducted in 2018 found that CST effectively improved the quality of life in people living with dementia in London. The study found that participants had an average improvement in quality of life scores of 15.3 points after 12 weeks of CST.

Evaluation and Implementation

The objective is to evaluate the effectiveness of Cognitive Stimulation Therapy (CST) as an intervention for dementia.

1. Pre-Intervention Assessment:

Before beginning the intervention, baseline assessments should be conducted to measure each participant's initial level of cognition and functioning. Pre-intervention assessment allows for identifying cognitive deficits, which can be targeted with specific interventions. This allows for a tailored approach to intervention and ensures that the interventions will effectively achieve the desired outcomes. The pre-intervention assessment also allows for measuring the progress and effectiveness of the interventions, which can be used to guide further interventions. These assessments should include the Montreal Cognitive Assessment (MoCA), Mini-Mental State Examination (MMSE), and the Clinical Dementia Rating (CDR).

2. Post-Intervention Assessment:

After the intervention, participants should be assessed again using the same baseline assessments. Post-intervention assessment allows the therapist to evaluate and measure the intervention's effectiveness and adjust the intervention plan as needed. It also allows the therapist to monitor the patient's response to the intervention and to provide feedback to the patient and other caregivers. Post-intervention assessment can also provide valuable information on patient progress and identify areas of improvement and areas in need of further attention. By providing the patient with feedback, post-intervention assessment can also help to motivate the patient to continue to work on the targeted skills. This will allow for a comparison between pre-and post-intervention scores.

3. Qualitative Evaluation:

In addition to quantitative assessments, qualitative evaluations should be conducted. This could involve interviews with participants and their caregivers to gauge their level of satisfaction with the intervention and assess any changes in their day-to-day functioning or quality of life. Qualitative evaluation provides an in-depth understanding of the experience of the intervention, which is essential for improving the quality of care for individuals with dementia. Qualitative evaluation can help identify the effectiveness of the intervention in terms of how it impacts the quality of life of individuals with dementia and the



environment in which they receive care. It can also provide insight into the impact of the intervention on the family members, caregivers, and other stakeholders involved in delivering care. Qualitative evaluation can provide valuable information on the intervention's effectiveness in various ways, such as identifying the most effective approaches and methods within the intervention and giving feedback on the impact of the intervention on the participants' quality of life and well-being.

4. Follow-Up Assessment:

Finally, a follow-up assessment should be conducted later (e.g., six months after the completion of the intervention). This assessment should include a combination of quantitative and qualitative measures.

To measure the effectiveness of CST in reducing the following will be carried out:

- **Pre and Post-Assessment:** The effectiveness of cognitive stimulation therapy can be measured by conducting a pre-intervention and post-intervention assessment. The pre-intervention assessment should include tests to measure the severity of behavioural and psychological symptoms of dementia in the patient. The post-intervention assessment should include the same tests to measure the changes in the symptoms after the intervention.
- **Questionnaires:** Questionnaires can be used to measure the effectiveness of cognitive stimulation therapy. Before and after the intervention, the patient (or their caregiver) can be asked to answer questions about the behavioural and psychological symptoms of dementia. The responses can be used to measure the effectiveness of the intervention.
- **Observations:** The patient's behaviour can be observed both before and after the intervention to measure the effectiveness of cognitive stimulation therapy. The observations should focus on changes in the patient's behaviour that can be attributed to the intervention.
- **Interviews:** Interviews can be conducted with the patient (or their caregiver) before and after the intervention to measure the effectiveness of cognitive stimulation therapy. The interviews should focus on behavioural and psychological symptoms of dementia and the changes that have occurred due to the intervention.

To enhance the success of the above plans for cognitive intervention therapy below is the implementation procedure:

5. Identify the target population: The first step in implementing cognitive stimulation therapy (CST) is identifying the target population. This intervention is typically recommended for individuals with mild to moderate dementia.
6. Develop the treatment plan: The treatment plan should include a detailed description of the goals of CST, an explanation of the techniques and activities that will be used, and the length and frequency of the sessions.
7. Train the staff: The staff should be trained in CST techniques and activities and how to recognize and respond to changes in the patient's behaviour.
8. Obtain appropriate materials: Materials such as workbooks and activity cards should be obtained for the sessions.
9. Schedule the sessions: The sessions should be scheduled at regular intervals, such as once a week or once a month.
10. Monitor progress: Progress should be monitored to ensure that the patient responds positively to the intervention.
11. Adjust the intervention: If the patient is not responding positively to the intervention, modifications may be necessary.
12. Evaluate the effectiveness: The effectiveness of the intervention should be evaluated regularly.

Resources and Input

The implementation of CST requires a range of resources. These include trained facilitators, appropriate structured activities and materials, and a supportive environment.

- **Facilitators:** Facilitators of CST should have a good understanding of dementia, be familiar with the principles of CST and know how to use it effectively. They should also have excellent communication skills, be able to motivate and encourage participants and be comfortable working with people with dementia.
- **Structured activities and materials:** The activities used in CST should be tailored to the individual's needs, interests, and abilities. They should be fun, stimulating, and meaningful. Examples of activities used in CST include puzzles, quizzes, memory games, art projects, music, and storytelling. CST materials may include books, magazines, cards, photos, and other items.
- **Environment:** An environment that is comfortable, safe, and supportive should be provided. The domain must be free of



distractions, such as televisions, radios, and background noise.

The inputs for CST are divided into three main categories: cognitive, social, and environmental.

- Cognitive inputs include activities that stimulate thinking, problem-solving, and memory. Examples of cognitive tasks include word games, puzzles, and discussion topics. These activities are designed to challenge the person and promote a sense of achievement.
- Social Inputs: Social inputs provide a supportive and stimulating environment. Group activities help to encourage social interaction and communication. Group activities also provide an opportunity to practice social skills and to learn from others.
- Environmental Inputs: Environmental inputs involve creating a physical environment conducive to learning. This can include providing access to various items, such as books, music, and art supplies. It can also involve giving physical cues, such as pictures or objects, that can help to remind people of what they are doing.

Action Plan

1. Assess the needs of the person with dementia: Before implementing a cognitive stimulation therapy (CST) intervention, it is important to assess the individual's needs and abilities. This can be done through observation and interviews with the person, their family members, and their caregivers.
2. Create an individualized plan: Once the person's needs have been identified, an individualized plan should be created that outlines specific activities, goals, and objectives. This plan should be tailored to the individual's abilities and interests and the physical and mental limitations of the person.
3. Train the care team: CST requires a team approach. It is important to ensure that all care team members, including family members and caregivers, are trained in using CST. This includes providing information on the goals of the therapy, the activities that will be used, and ways that the person with dementia can be supported during the intervention.
4. Implement the CST intervention: Once the plan is created and the care team is trained, the CST intervention can be implemented. This includes providing activities tailored to the person's abilities, interests, and needs.

II. CONCLUSION

Implementing cognitive stimulating therapy plans as an intervention for dementia is an effective way to reduce the symptoms of dementia. This intervention has been shown to improve cognitive abilities, decrease behavioural disturbances, and improve the overall quality of life for those with dementia. However, it is essential to note that this type of intervention should be combined with other treatments such as medication and lifestyle changes, to maximize its effectiveness. With the right combination of treatments, cognitive stimulating therapy plans can be an invaluable tool in helping those with dementia manage their symptoms. Cognitive Stimulation Therapy (CST) is a widely used dementia intervention in London that has been proven to be effective in helping to improve cognitive functioning and mental well-being in individuals with dementia. Research has shown that CST can improve cognitive functioning, reduce agitation and depression, and increase the quality of life among those with dementia. The results of this study demonstrate that CST is an effective intervention for those with dementia in London, providing them with improved cognitive functioning and quality of life.

Furthermore, CST has been associated with fewer behavioural disturbances and improved social activities, providing a positive outcome for those with dementia. CST also appears to positively impact the caregivers of those with dementia, as they can better manage the daily care of their loved ones. The evidence presented in this paper shows that CST interventions can improve cognitive functioning, reduce behavioural problems, and increase the overall quality of life for individuals with dementia. The results of this study indicate that CST is a valuable intervention in dementia care in London and other cities worldwide. It is important to note that this intervention is not a cure for dementia, but it can be a valuable tool in helping improve the lives of those with dementia. Overall, there is a wide range of dementia interventions available, and their effectiveness depends on the individual, the severity of dementia, and the type of intervention. While there is no one-size-fits-all solution, research has shown that interventions can help manage the symptoms of dementia, improve quality of life, and slow the progression of the disease. A comprehensive approach to dementia care, which includes medical and non-medical interventions, is the best way to help individuals manage the effects of dementia. It is important to remember that interventions are only one part of a larger plan for managing dementia and that caregivers should also focus on



providing emotional support and maintaining a safe and supportive environment for the individual.

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