

## Research article

**The efficacy of cognitive stimulation therapy (CST) implemented in individuals with dementia: A systematic review****Neslihan LOK\*, Kadriye BULDUKOGLU**

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**Abstract**

**Background:** With the increase of the elderly population the prevalence of dementia has also increased. Intellectual capacity and cognitive functions quickly decline with dementia, presenting the need for special measures in care-giving. Psycho-social practices have also gained particular importance in the treatment of dementia, besides the drug treatment modalities. The efficacy of Cognitive Stimulation Therapy (CST), developed for increasing cognitive activity of individuals with dementia, was evaluated in this systematic review. **Material and Methods:** In this systematic collection, the effectiveness of Cognitive Stimulation Therapy (CST) developed for increasing cognitive activity of individuals with dementia, is evaluated. CST, as it is described by articles in *Pubmed*, *Cinahl*, *Wiley Interscience*, *Sciedirect*, *Ovid*, *Cochrane*, *Ulakbim Turkish Medical Index*, Turkish Medline databases was reviewed. The database research was conducted in English and Turkish using 10 keywords. Six studies were identified using this approach and are included in this review. **Results:** It is observed that CST brings about significant improvements in cognitive functions and this offers a better quality of life. Besides, it appears that CST has no stated side-effect. In addition, it is stated that for the CST's proof values strengthening, much more randomly controlled studies are necessary. **Conclusion:** In all the studies evaluated, together with the suggestion of new and much more CST being done, it is seen that CST, administered to individuals with dementia, induces positive and provable results.

**Keywords:** Dementia, Elderly, Cognitive Stimulation Therapy

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**1. Introduction**

Dementia is seen most often above the age of 65 and its frequency increases with age. While the frequency at 65 years is 5%, it shoots up to 50% by the age of 85 and over [1, 2]. There are approximately 35.6 millions of patients with dementia all over the world and this number would increase four times by 2050, according to some estimates [1]. Dementia is characterized by advancing deterioration in cognitive functions such as memory, language, abstract thinking, problem solving and regression in social functionality and intellectual capacity. It progresses quickly and becomes more severe soon after the diagnosis. [3-6]. Cognitive functions are most affected by regression dependent on dementia. In dementia, cognitive

variations are special to the individual and memory could be affected to a large extent. Furthermore, it affects one's capacity for self-care, responsibilities at home, interpersonal relations, free time activities, daily life activities, communication and participating in group activities [6,7].

Since the 1960s, psycho-social interventions are used as supportive therapy besides the drug treatment of dementia [8]. In dementia treatment, many psycho-social factors such as behavior, feeling, perception and cognitive stimulation centered interventions, enhance cognitive activity and add to the drug treatment [4,5]. Among the cognitive stimulation centered therapies, the most widely used is Cognitive Stimulation Therapy (CST) [3,4,6]. CST is used

for cognitive disorders and is an out of drug psychological intervention that increases person's cognitive and/or social functionality, individual, group or a care giver's sociability and life quality, and focuses on developing cognitive functions, social and interaction skills [3,6,9].

CST has been used as an intervention method in scientific studies for 10 years and its effect on patients with slight/medium grade dementia has been evaluated. This systematic review aims to evaluate Cognitive Stimulation Therapy and its effects. "What is CST and what are the effects of CST on individuals with dementia?" are the starter questions of this systematic review.

## 2. Method

### 2.1. Description of CST

CST is developed on the theoretical and practical basis of "Cochrane review of Reality Orientation" [4, 10]. and utilized in individuals with slight and moderate dementia. CST is a non-medication method used for measuring cognitive signs and function stability. It is an evidencebased treatment modality, usually planned after the extensive evaluation of the research results [3, 11]. CST includes 14 sessions with different themes. The therapy is planned as two weekly sessions spread over seven weeks. While the sessions offer an active education atmosphere and personal and social sharing, it also aims to strengthen and develop the individuals cognitively. [3, 12] Nurses, psychologists, professional therapists and health professionals working on dementia care can practice CST provided they complete a proper training. [12, 13]

### 2.2. Systematic literature research

This review is systematically conducted with the aim of determining the effects of cognitive stimulation treatment programme (CST) implemented in individuals with dementia. It was conducted in line with the guidelines of Centre for Reviews and Dissemination (CRD) developed by York University National Health Researches Institution in 2009. The literature review, carried out between 5 March 2013 and 2 April 2013, covered *Pubmed*, *Cinahl*, *Wiley Interscience*, *Sciedirect*, *Ovid*, *Cochrane*, *Ulakbim Turkish Medicine Index*, *Turkish Medline databases* regardless of the publication years.

Five English and four Turkish keywords were used, namely, cognitive stimulation dementia, cognitive stimulation therapy, cognitive stimulation therapy and dementia, cognitive stimulation therapy and elderly, CST dementia. The results indicated that no Turkish article could be found related to the subject.

The inclusion criteria included randomized, experimental and half-experimental research reports conducted with cognitive stimulation treatment program (CST) in individuals diagnosed with dementia and exclusion criteria included collections, qualitative and diagnostic researches. Eventually 2532 (*Pubmed*: 927, *Cinahl*: 398, *Wiley Interscience*: 167, *Sciedirect*: 552, *Ovid*: 457, *Cochrane Library*: 31) researches were reviewed and consequently, six researches were included in the study (Figure1).

## 3. Results

Six research articles were reviewed in this study, all of which had been conducted in England and each was carried out by a clinic psychologist. The discoveries were classified under the titles of "Sample's Features, Practicing Durations and Groups' Features, Measurement Tool that are Used, CST's Effectiveness" (Table 1).

### 3.1. Sample Characteristics

The researches included in the review were conducted between 2003 and 2013. Elderly people diagnosed with dementia composed the study sample. In the studies it was seen that the largest sample was 272 [14] and the smallest was 35 [15] people.

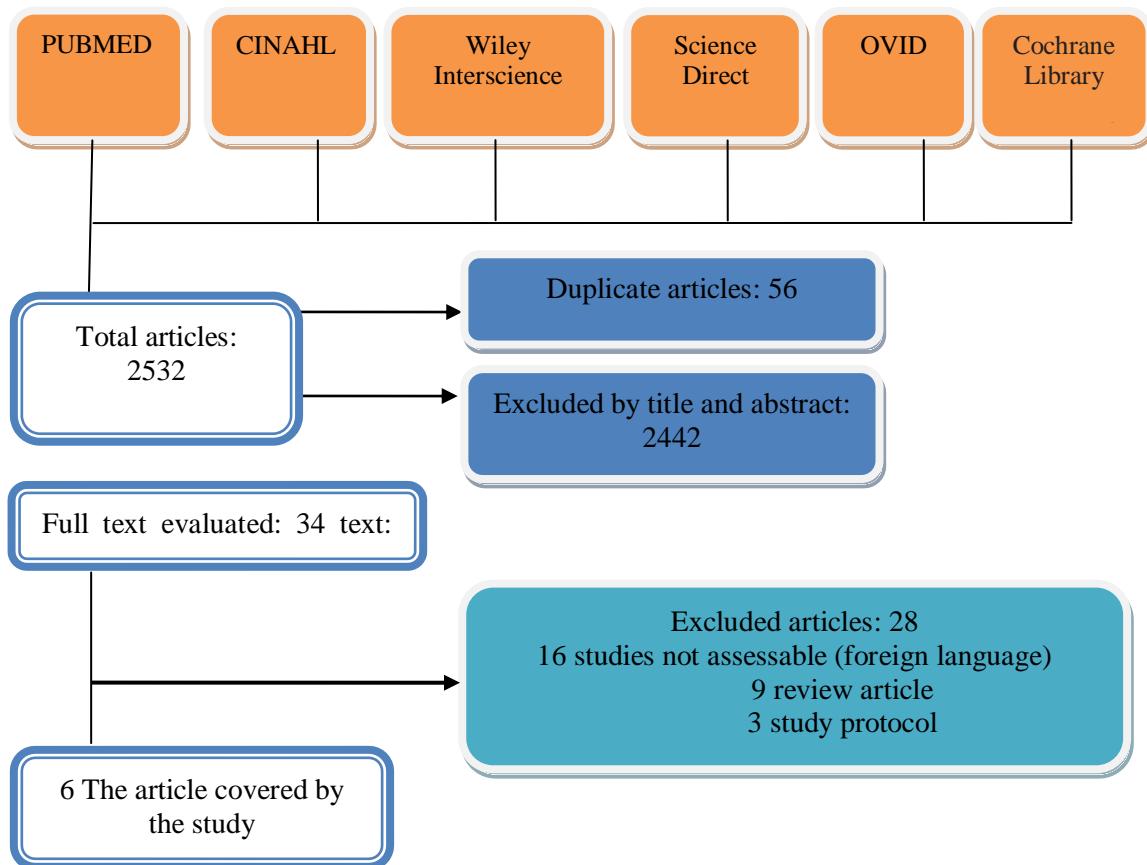
### 3.2. Practicing Durations and Groups Features

The duration of CST practiced was 14 sessions of approximately 45 minutes each, spread over seven weeks, in all the studies. [4, 9, 10, 11, 14, 16] In a study conducted by Orrell et. al [15] three groups were labelled as CST, mCST (Maintenance CST) and control. The standard 14-session therapy schedule was implemented with the CST group, while in mCST group 16 sessions, were done [Table 1]. Medication continued in all of these studies [4, 9, 10, 11, 14, 16].

Table 1 Characteristics of the study received for review

Author, Year [Method]	Sample's Features	Practicing Durations and Groups' Features	CST's Effectiveness
Spector et al, 2003 [ Method]	-201 patient CST:115 Control: 86	<b>CST</b> -Two times per week for seven weeks- Therapy was administered 14 sessions. -The mean duration of therapy was 45 minutes long. <b>Control</b> -Did not apply to any intervention.	-CST group has improved the quality of life by improving cognitive functions. -CST group, no significant differences in anxiety and depression scores was observed.
Orrell et al, 2005 [ Method]	-35 patient CST:12 mCST: 8 Control: 15	<b>CST</b> Two times per week for 7 weeks- Therapy was administered 14 sessions. -Therapy took an average of 45 minutes. <b>mCST</b> -mCST 2 times per week for 7 weeks were administered 14 sessions. -The mean duration of therapy was 45 minutes long. <b>Control</b> -Did not apply to any intervention.	mCST quality life and CST groups increased after the initial measurement according to the CST. -MMTE scores CST and mCST groups according to initial measurement were increased after CST. -CST group communication scale scores were higher than the other groups. -mCST group mean scores on the behavior rating scale was found to increase by the CST and the control group.
Knapp et al, 2006 [ Method]	-161 patient CST: 91 Control: 70	<b>CST</b> -Two times per week for seven weeks- Therapy was administered 14 sessions. -The mean duration of therapy was 45 minutes long. <b>Control</b> -Did not apply to any intervention.	-Improvement in cognitive functions in CST has occurred. -CST group significantly increased the quality of life. CST program is relatively cost-effective.
Woods et al, 2006 [ Method]	-40 patient CST: 25 Control: 15	<b>CST</b> -Two times per week for seven weeks- Therapy was administered 14 sessions. -The mean duration of therapy was 45 minutes long. <b>Control</b> -Did not apply to any intervention.	-The quality of life has increased significantly in the CST group. -MMT compared to the control group-CST scores increased significantly. -CST group has improved the quality of life by improving cognitive functions. -CST group cognitive functions increases the quality of life has increased.
Spector et al, 2010 [ Method]	-201 patient CST: 115 Kontrol: 86	<b>CST</b> -Two times per week for seven weeks- Therapy was administered 14 sessions. -The mean duration of therapy was 45 minutes long. <b>Control</b> -Did not apply to any intervention.	-Improvement in cognitive function was- CST. -CST group after application of ADAS subscales (new learning, practices and languages including) a significant increase has occurred.
Aguirre et al, 2013 [ Method]	-272 patient CST: 272	<b>CST</b> -Two times per week for seven weeks- Therapy was administered 14 sessions. -The mean duration of therapy was 45 minutes long. <b>Control</b> -Did not apply to any intervention. * Research before you start and at the end of seven weeks that follow after CST is made.	-Improvement in cognitive functions in CST has occurred. -CST group significantly increased the quality of life. -CST in men and in individuals with dementia under the age of 80 and it is necessary to increase cognitive activity.

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)



(From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement.)

### 3.3. Measurement Tools

The cognitive condition of individuals with dementia was evaluated with various measurement tools such as Mini Mental Scale Examination (MMSE) [4,9,10,11,14,16], Alzheimer's Disease Assessment Scale - Cognition (ADAS-Cog) [4,9,10,16], Quality of Life-Alzheimer's Disease Scale (QoL-AD) [4,9,10,11,16], Holden Communication Scale [4,10,11], the Clifton Assessment Procedures for the Elderly - Behavior Rating Scale (CAPE-BRS) [4,10,11], Clinical Dementia Rating scale (CDR) [4,10], Cornell Scale for Depression in Dementia [4,10], Scale Rating Anxiety in Dementia (RAID) [4,10], Inventory of Neuropsychiatric [14], and Inventory of Cooperation for Alzheimer's Daily Life Activities [14]. The observations in the examined studies are made before the start of

examination and after the operation; namely at the end of 7th (seventh) week. [4,9,10,14,16] In Orrell et al [11], the observations are made before the start of examination and after CST finished, namely at the end of the 7th (seventh) week and on 23rd (twenty-third) week.

### 3.4. CST Efficacy

In a study conducted by Spector et al [4], the CST program was evaluated in individuals with dementia for efficacy in increasing the cognitive activity. Relatively to the control group, intervention MMTE and ADAS points increased meaningfully in the intervention group. In the test group, CST was found to increase the quality of life by restoring cognitive functions. At the same time, it improved communication between patients and enabled interactions. No significant

difference was reported in relation to the anxiety and depression scores of the test and the control group. The Orrell et al [11] study sample was divided into three groups, CST, mCST and control group. In contrast to the control group, cognitive functions and the quality of life were reported to increase after the implementation of the program in mCST and CST groups. In addition, in comparison to the control and the mCST groups, the CST group showed a relatively higher average score of communication skills. . And in the mCST group, the average score on the behavior evaluation scale was higher than the CST group and the control group. In a study done by Knapp et al [16], the cost effectiveness of CST on individuals with dementia, was analysed. A relative recovery in cognitive functions and increase in the quality of life were observed in the CST group. Besides, implementing CST was considered as a means to delay using hospital services, which was noted to be relatively cost effective. Woods et al [10] investigated the effect of CST on the quality of life individuals with dementia and found that the cognitive functions of individuals with dementia improved, thus enhancing the quality of life as well. Also, in the CST group, there was betterment in the depression and anxiety scores with the increasing scores of the quality of life. When Spector et al [9] examined CST efficacy in individuals with dementia it was eventually reported that cognitive functions recovered in the CST group. Besides, in this study, the sub-dimensions of Alzheimer Disease Assessment Scale (ADAS) were examined. A significant increase was found in the sub-dimensions of the ADAS scale (word memory, understanding and speaking skills). Aguirre et al [14] similarly reported a recovery in cognitive functions and a significant increase in the quality of life in the CST group. Also, CST was found to be more effective in increasing cognitive activity and quality of life in women and individuals with dementia over 80.

#### 4. Discussion

In this systematic review, an answer to the question "What is Cognitive Stimulation Therapy (CST) that is offered to individuals with dementia and what are its effects?" was sought. Six researches conducted by the practice of CST with the aim of increasing cognitive activity of

individuals with dementia, were considered. All reviewed studies were randomly controlled studies. CST is a method, used for dementia, prepared by researching non-pharmacologic treatments (on the data basis of theory and evidences in Cochrane review of Reality Orientation) [10]. All research papers reviewed in this study were implemented by trained psychologists. CST can also be carried out by nurses, psychologists and health professionals caring elderly people [3,4]. CST is mainly implemented by psychologists because the technique was basically developed by them, but it hasn't become common yet. Uses of CST in individuals with dementia include: improvement of memory, cognitive recovery, greater skills, better behavior and quality of life. By enabling these, it reduces the responsibility and stress on the care-givers and so it increases their life quality as well [3,4,16].

In the psycho-social interventions by psychiatry nurses with the individual and his family, the aim is to create differences cognitively, affective and behavior on individual and reducing the family's responsibility and stress [17,18]. Besides, CST is compatible with psychiatry nurses' objectives: to keep, develop individuals' health, enable cognitive recovery and raise quality of life [19, 20]. As it is seen, CST's aims and effectiveness are related with practice of psychiatry nursery and it is understood that it can also be practiced by nurses.

The review elicited that there are only a few studies evaluating the efficacy of CST and their conclusions are similar. The results of the studies indicated that CST has positive effects on increasing cognitive activity of individuals with dementia. Cognitive skills include intelligence, language, attention, learning and memory, visual-spatial functions and the dynamic interactions between these [16]. Cognitive capacity is reduced with dementia and this loss increases gradually as the illness progresses. Even though the deterioration in skills is curbed with drug treatment, it should certainly be supported by psycho-social practices [21, 22]. With CST program, cognitive activities are improved [4,9,10,11,16] and significant cognitive functions can be maintained [3,21,22].

In five of these studies, CST was implemented to enhance the quality of life that had decreased with the progressive dementia, [4,10,11,14,16]. In old people with dementia, improving the standards of health and ability to lead an independent daily life are seemingly related with cognitive and physical level and active participation in life [23]. Quality of life has the key role in good health. Dementia affects negatively lots of areas like personal care, housework, interpersonal relations, leisure activities, daily routine activities, communication and joining groups besides disruption of cognitive processes like learning, knowing, judging [3,6]. These negative effects make the person with dementia dependent on other people and decrease his quality of life [24-26]. While the psychiatry nurses can meet the needs of the people they care, at the same time they should plan and practice suitable enterprises for rising life quality [27]. By restoring the cognitive functions of the elderly with dementia, CST strengthens communication skills and enables an atmosphere for interaction with peers [4,10,11]. The trouble in communication increases more with dementia. The difficulty of finding the right word to say is the most affected cognitive problem with advancing years [28-30]. In elderly people with dementia, skills of communication, language and perception decrease gradually and even the most familiar words can't be remembered [16,31]. With CST especially the "Word Completing" session, individuals are assisted to strengthen vocabulary and recall them from memory [3,4,10]. The implementation of CST programs is important for psychiatry nurses to strengthen the communication skills of the elderly with dementia.

Knapp et al [16] stated that CST is rationally cost effective. The cost effectiveness of CST program was examined by the London School of Economics (LSE) and it was found that CST is cost effective rationally to normal [21,22,32]. In a rapidly changing world and developing health services, the significance of holistic and cost-effective health services has been emphasized, focusing not only on the disease and treatment but their different aspects that affect people and their perception of health and illness [22,24]. As the CST program increases the cognitive activity

in dementia, it is thought to be cost effective for gradually delaying the cost of dementia.

All the studies included in the research were randomly controlled. The review results showed that CST has important effects [4,9,10,11,16]. These tests also enable an evaluation of language and visual-auditory skills besides increasing memory and orientation. The results also suggested that CST ensures significant recoveries in cognitive functions and enhances the quality of life, while having no important side effects. [3,21,22]. Besides, it was noted that further randomly controlled studies are needed to reinforce the study data.

## 5. Conclusions and suggestions

As a consequence, together with the suggestion of doing new and more RCT in all the studies, it is seen that CST, administered to individuals with dementia, has provable results. No studies on CST have been performed in Turkey so far. In light of these results, it is recommended to

- Raise awareness among nurses undertaking geriatric care through short term courses, formal and life-long education about CST. Encourage psychiatry nurses to take part in CST planning and implementation
- Develop a form of CST, suitable for Turkish culture.

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