

EFFECTS COGNITIVE STIMULATION THERAPY FOR DEMENTIA: SYSTEMATIC REVIEW

Indonesian Nursing Journal of Education
and Clinic (INJEC)
Volume 7 Issue 2, December 2022
DOI: 10.24990/injec.v7i2.539
injec.aipni-ainec.org/index.php/INJEC/index
Received : 2022-11-01
Accepted : 2023-02-20
The Association of Indonesian Nurse
Education Center (AINEC)

Ni Ketut Elmiyanti^{1*} and Niswa Salamung²

Abstract

Introduction: The prevalence of dementia in the elderly continues to increase along with the need for appropriate interventions; one therapy that can be used is cognitive stimulation therapy (CST). The aim of this study was to a review and analyze the effects of cognitive stimulation therapy for elderly people with dementia.

Methods: This research systematic study used scoping method. Article searches using keywords are limited by inclusion and exclusion criteria. The inclusion criteria were articles in English, using cognitive stimulation therapy interventions in the study and the population was the elderly. Articles sourced from the electronic database Scopus, PubMed, Science Direct, Google Scholar, and ProQuest were identified as appropriate and relevant to this topic. Fifteen research studies were selected and analyzed as qualifying as review articles for systematic review.

Results: Thirteen studies were Randomized Control Trial (RCT), one controlled clinical trial and one group pretest-posttest. The results showed that CST was very influential on memory, language comprehension, and orientation for cognitive improvement in mild to moderate dementia. CST should be done periodically to get good results. In addition, the effect of CST may differ according to what factors are emphasized in the program.

Conclusions: CST in the elderly with mild to moderate dementia can significantly improve overall cognitive function. CST should be done periodically to get good results. Based on the findings, CST is more optimal when combined with physical activities such as sports.

Keywords: cognitive stimulation therapy, dementia, elderly

¹ Nursing Department, STIK Indonesia Jaya, Sulawesi, Indonesia

Corresponding Author

Ni Ketut Elmiyanti
Nursing Department, STIK Indonesia Jaya, Sulawesi, Indonesia
Email: shofi.ketutelmiyanti@gmail.com

INTRODUCTION

Dementia is a global public health challenge today. Decreased brain function that occurs in patients with dementia has an impact on progressive cognitive decline and can interfere with daily activities. Decreased cognitive function often appears in the elderly, whereby they experience a decrease in functions such as speed and accuracy in the use of the five senses, athenicity, memory, function of differentiation, comparison and categories (Abraha et al., 2017). Globally, about 50 million people live with dementia, and this is expected to increase to 150 million by 2050. Globally diagnosed cases of new dementia are around 10 million each year (World Health Organization,, 2017). The absence of an effective drug for mild and moderate types of dementia requires research that focuses on the development and application of non-pharmacological interventions such as adjunctive therapy (Livingston et al., 2017). Cognitive Stimulation Therapy (CST) is the only non-pharmacological therapy recommended by the National Institute for Health & Clinical Excellence (2016) guidelines for cognitive therapy in dementia patients in the UK (Hodge, Hailey and Orrell, 2014).

Cognitive stimulation is an intervention that offers a variety of fun activities and provides an overview of stimulation for thinking, concentration, and memory that is usually carried out in a small groups social environment (Spector, Orrell and Woods, 2012). Several studies have shown that cognitive therapy has a positive impact on improving the quality of life of patients with dementia and is more cost-effective (Orrell et al., 2017).

The impact of CST on dementia patients shows that the cognitive domains, memory, ability to perform tasks, and orientation

with others improve (Capotosto et al., 2016). In developing countries, there is still a lack of use of CST therapy, and little data are known about its effectiveness (Prince et al., 2016). This is because it is considered to have less impact on dementia patients (Legere et al., 2018). In the current study, we conducted a systematic review to review and analyze the effects of cognitive stimulation therapy in dementia patients.

METHODS

This systematic review applies the scoping review approach method which consists of five main stages, namely, first: Provide assistance with problems and determine research questions that are in accordance with the objectives, where at this stage the researcher helps with problems regarding dementia, which has a large number of cases and needs to be treated not only through pharmacological treatment but needs to develop non-pharmacological therapies. Dementia sufferers experience decreased memory and ways of thinking. This condition has an impact on lifestyle, ability to socialize and daily activities. One of the therapies that can stimulate cognitive function is CST. Based on this, the research question is: what is the cognitive effect of simulated therapy on dementia?

Second: Identify various sources of relevant literature. The systematic review design was reviewed from eligible full-text articles. Comprehensive search was conducted in five electronic databases, including Scopus, PubMed, Science Direct, Google Scholar and ProQuest referencing publications from the last ten years, namely 2012 to 2022 and full-text articles in English. When searching for journals researchers used keywords and the Boolean operator (AND). The keywords

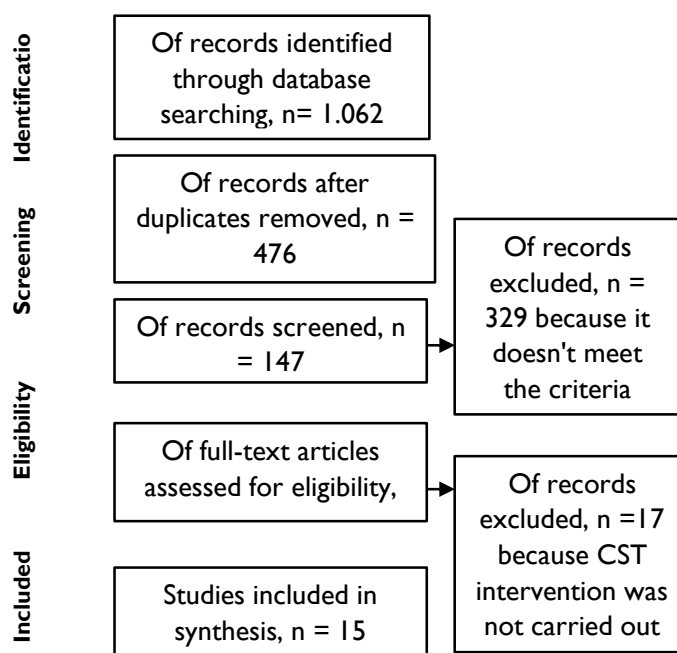


Figure 1. PRISMA Flow Diagram

used in this systematic review were "effect," "cognitive stimulation therapy," and "dementia."

Third: Selecting the literature that has been obtained by paying attention to the research topic. The journal search process was carried out from September to October 2022. The search for articles using keywords was limited by inclusion and exclusion criteria. The inclusion criteria in this systematic review were (1) English language journals, (2) the intervention used was cognitive stimulation therapy, (3) the research subjects were elderly. The exclusion criterion was non-pharmacological studies that are not cognitive therapy. The data obtained were then selected one by one by the researcher to determine the suitability of the desired article and to remove duplicate articles or those that did not meet the criteria. After getting the articles that matched the research, the articles were analyzed one by one and grouped to get the results. The next step was to discuss

the subject based on the selection results.

Fourth: Mapping and collecting the literature obtained. At this stage the researcher conducted a literature analysis then classified the results of the research. The data collected from the database were stored at Mendeley. The researcher studied the filtered data and research results, abstracts and full text of the relevant guidelines. After reviewing the full text of these guidelines, data were submitted to the PRISMA checklist. Any gaps in the article will be discussed.

Fifth: Compiling and reporting the results of the analysis. At this stage, the researcher analyzes, summarizes, and compiles the selected literature then reports the results in the research topic table analysis (Table 1).

No	Title Author	Study Design	Population	Intervention	Result
1.	Cognitive stimulation therapy for people with dementia in Brazil (CST-Brazil): Results from a single blind randomized controlled trial (Marinho <i>et al.</i> , 2020)	Randomized controlled trial	201 older people with dementia	Participants being randomly allocated to either 14 sessions of CST þ treatment as usual (TAU; n ¼ 23) or TAU (n ¼ 24) during 7 weeks. Given activity themes such as food, childhood, numbers and orientation tailored to the ability of the group.	CST-Brazil proved to be a feasible and useful intervention to improve mood in people with dementia, with high acceptance between study participators.
2.	Effects of a Multicomponent Cognitive Stimulation Program on Cognitive Function Improvement Among Elderly Women (Park, Kim and Shim, 2019)	A one-group pretest-posttest	Participants included 37 people	A paired t-test was used to compare K-MoCA scores before and after the MCSP, and a two-way analysis of variance was performed to confirm whether there is an interaction between the MCSP and age.	It was found that the MCSP had a significant effect on improving cognitive functions (t ¼ 5.15, p < .001). Regarding the subdomains, visuospatial/executive ability, recall, naming, and language ability showed significant effects; however, abstractive ability which was not a focus of the program showed no significant effect.
3.	Validation of the cognitive stimulation therapy (CST) program for people with dementia in Portugal (Spector, 2020)	Randomized controlled trial	112 older people with dementia	The intervention group CST sessions took place twice a week for 7 weeks, with each session lasting 45 to 60 min. Whilst CST groups ran, the control groups continued with usual activities.	The intervention group significantly improved relative to controls in cognition (ADAS-Cog, p¼0.013), communication (HCS, p¼0.045), behavior (CAPE-BRS, p¼0.017) and in global dementia rating (CDR, p¼0.008). Quality of life, depression and anxiety had no significant differences.
4.	Cognitive stimulation therapy in the Italian context: its	Randomized controlled study	n=39 older people with dementia	One group participated in the CST-IT, consisting of 14 sessions (twice a week for 7	After the intervention, only the CST-IT group maintained its MMSE score, while the control group displayed

No	Title Author	Study Design	Population	Intervention	Result
	efficacy in cognitive and non-cognitive measures in older adults with dementia (Capotosto et al., 2016)			weeks) and the active control group took part in alternative general activities.	deterioration.
5.	Cognitive Stimulation Therapy for Older Adults With Mild-to-Moderate Dementia in Italy: Effects on Cognitive Functioning, and on Emotional and Neuropsychiatric Symptoms (Carbone et al., 2021)	Randomized controlled study	N=225 Older adults with mild-to-moderate dementia	Group intervention attended 20 sessions over a period of 23 weeks. While the group control engaged in alternative education activities.	At both the short- and long-term assessments, the CST-IT group's MMSE scores remained stable, while the control group's scores decreased slightly from pretest to posttest and at follow-up.
6.	Combined Exercise and Cognitive Training System for Dementia Patients: A Randomized Controlled Trial (Okamura, Otani, Shimoyama, and Fujii, 2018)	Randomized controlled trial	100 dementia patients	The intervention group was subjected to a combined exercise and cognitive training for 6 consecutive weeks.	A comparison of the changes in scores on the evaluation scales between the intervention group and the control group showed significant interactions for all scores.
7.	The impact of individual Cognitive Stimulation Therapy (iCST) on cognition, quality of life, caregiver health, and family	Randomized controlled trial	356 people with mild to moderate dementia	Participants were randomly assigned to CST (75, 30-min sessions) or treatment as usual (TAU) control over 25 wk. CST sessions consisted of themed activities designed to be	There was no evidence that iCST has an effect on cognition or QoL for people with dementia. However, participating in iCST appeared to enhance the quality of the caregiving relationship and caregivers' QoL.

No	Title Author	Study Design	Population	Intervention	Result
	relationships in dementia: A randomized controlled trial (Orrell et al., 2017)			mentally stimulating and enjoyable.	
8.	The effects of a Cognitive Stimulation Therapy [CST] program for people with dementia on family caregivers health (Aguirre et al., 2014)	Randomized control trial	N=85 older people with dementia	All the people with dementia received the standard twice weekly for 7 weeks of the CST intervention plus either 24 weeks of a maintenance CST (MCST) intervention or 24 weeks of treatment as usual.	CST seems to have a relatively specific benefit for people with dementia that may not carry over to family carers.
9.	Maintenance cognitive stimulation therapy for dementia: single-blind, multicenter, pragmatic randomized controlled trial (Orrell et al., 2014)	Randomized control trial	236 people with dementia	The intervention group received the weekly maintenance CST group program for 24 weeks. The control group received usual care. Primary outcomes were cognition and quality of life.	Results For the intervention group at the 6-month primary end-point there were significant benefits Dementia Quality of Life scale (DEMQOL) P=0.03).
10.	Efficacy of cognitive stimulation therapy for older adults with vascular dementia (Piras et al., 2017)	Randomized controlled study	35 people with dementia	One group (N = 21) attended the 14 sessions of the CST-IT program, while the other, active control group (N = 14) took part in alternative activities. The following domains were examined: cognitive functioning, quality of life, mood, behavior, functional activities of daily living.	No significant differences emerged between the two groups for the other domains considered. The present results support the efficacy of CST in people with vascular dementia.
11.	The effects of	Random	101 people	The treatment	The treatment group

No	Title Author	Study Design	Population	Intervention	Result
	an expanded cognitive stimulation therapy model on the improvement of cognitive ability of elderly with mild stage Dementia living in a community - a randomized waitlist controlled trial (Young et al., 2018)	ized controlled study	with dementia	group participated in a structured CST group followed by tai chi twice a week, with a total of 14 sessions throughout the study period. The waitlist control group received treatment as usual at the initial stage and expanded CST model at a later stage.	was significantly more effective than the control group in improving the MMSE score ($F = 12.31$, $p < .01$) with a moderate effect size (partial eta square = .11) after controlling for group difference in age, gender, education, and having a diagnosis of dementia.
12.	The Effect of Cognitive Stimulation on Nursing Home Elders: A Randomized Controlled Trial (Apóstolo, Cardoso, Rosa and Paul, 2014)	Randomized controlled study	56 people with dementia	Participants of the experimental group underwent 14 CST sessions (7 weeks) in groups of six to eight older adults, and participants of the control group received usual care.	Repeated measures revealed that CST increased cognition ($F = 8.581$; $p = .005$; partial η squared = 0.157; power = 0.82).
13.	Effects of cognitive stimulation therapy Japanese version (CST-J) for people with dementia: a single-blind, controlled clinical trial (Yamanaka et al., 2013)	Controlled clinical trial	56 people with dementia	CST-J consisting of 14 sessions was administered to a treatment group (n = 26) twice a week for 7 weeks. The treatment group was compared with a control group (n = 30).	There were significant improvements in cognition for the treatment group compared with the control group ($p < 0.01$).
14.	Cognitive stimulation therapy (CST) for people with dementia - who benefits	Randomized control trial	272 people with dementia	The program consisted of fourteen, 45-min sessions over 7 weeks. Assessments were carried out	These results demonstrate that CST improves cognition and quality of life for people with dementia including those already on

No	Title Author	Study Design	Population	Intervention	Result
	most (Aguirre et al., 2012)			pre-treatment and post-treatment.	AChEIs. Older age and being female were associated with increased cognitive benefits from the intervention.
15.	Cognitive Stimulation Therapy (CST): effects on different areas of cognitive function for people with dementia (Spector, Orrell and Woods, 2012)	Randomized control trial	201 participants (115 treatment, 86 control)	Cognitive Stimulation Therapy, a 14-session group treatment. This study looks at the subscales of the ADAS-Cog (memory and new learning, praxis and language) and compares the outcome of CST with a treatment as usual control group.	There was a significant difference between treatment and control groups in total ADAS-Cog score ($p \leq 0.01$) and in the language subscale ($p \leq 0.01$). There were no significant changes in memory and orientation or praxis.

RESULTS

By following the search strategy and paying attention to the inclusion and exclusion criteria, 15 full-text articles were obtained and warranted to be analyzed. Research study involved analysis of title, author, study design, population, intervention agency, and outcome measures. Thirteen studies were Randomized Control Trial (RCT), one controlled clinical trial and one group pretest-posttest. These 15 articles describe cognitive stimulation interventions that involve a variety of fun activities such as word games, cooking, gardening, and discussing past events that occurred. The provision of CST interventions in dementia patients was carried out from 7 weeks to 25 weeks, with an average duration of two times a week.

Of the 15 articles, research was conducted in several countries, namely Brazil, Italy, Portugal, South Korea, UK, and Japan. In the first article, Marinho et al. (2020) the sample is for patients with a clinical diagnosis of mild and moderate dementia. This article uses a randomized controlled trial (RCT) method. The intervention was given in groups of 5 to 8 people. Intervention activities for seven weeks, twice a week with a total of 14 sessions. Given activity themes were such as food, childhood, numbers and orientation tailored to the ability of the group.

The next article published by Park, Kim and Shim, (2019) was conducted to identify the effect of CST on improving the cognitive abilities of the elderly by using the paired T-test method to compare the Korean-Montreal Cognitive Assessment (K-MoCA) scores which were used to measure cognitive function before and after

CST. The activities given were paper puzzle, Card Flip game, playing a musical instrument according to the number, creating a picture frame with a couple, digit symbol/Insert +/- in blank, imitating a hand/calculating the numbers by hand, performing a task with a two-person triangle, and recalling (specific year or season). Measuring tools used to measure cognitive function are the Montreal Cognitive Assessment (MoCA), the Mini-Mental State Examination (MMSE), and the Dementia Quality of Life scale (DEMQOL).

The limitations in this study are that some of the results of the research reviewed were from journals published 10 years ago, all journals used are English-language journals which results in some important data being lost due to poor translation skills, and lack of journals on cognitive simulation therapy whose population is dementia in the elderly so that there are several journals where the population is all people with dementia.

DISCUSSION

The positive effect of giving CST further reinforces the importance of dementia treatment which not only focuses on pharmacological treatment, but also a non-pharmacological treatment that has a positive, evidence-based psychological impact on people with dementia. Findings regarding the experience of people with dementia reported comfort and even increased self-confidence after attending CST (Rai, Yates and Orrell, 2018). The results of the Hall et al. (2013) study show that CST is very influential on memory, language comprehension and orientation for cognitive improvement in mild to moderate dementia.

The use of CST is believed to

improve cognitive function because of the use of multisensory stimulation consisting of sight, smell, hearing and touch. In addition, CST aims to improve memory and understanding of instructions (Park, Kim and Shim, 2019). According to Young's (2020), research on applying CST to the elderly shows that cognitive and memory progress occurs because of the activities provided in the form of hand movements, word games, paper posting puzzles, playing musical instruments, making photo frames, and imitating the shape of the hand all of which can stimulate brain activity and cognitive function and, thereby delaying cognitive decline.

The CST program showed significant results before the intervention and after the result, there was an increase in cognition ($p=0.013$) communication ($p=0.045$), functionality ($p=0.017$) and severity of dementia/disability ($p=0.008$). While for the quality of life depression and anxiety did not show significant results (Spector, 2020).

CST can also be combined with physical interventions such as sports activities which have a significant impact on overall cognitive function ($p<0.00$), daily activities ($p<0.01$) and mood ($p<0.01$) in elderly with dementia (Bossers et al., 2017).

CONCLUSIONS

CST in the elderly with mild to moderate dementia can significantly improve overall cognitive function. The given CST activities such as hand movements, word games, paper post puzzles, playing musical instruments, making photo frames, and imitating the shape of the hands can activate the activity and cognitive function of the brain so as to delay cognitive decline. CST should be

done periodically to get good results. In addition, the effect of CST may differ according to what factors are emphasized in the program. Based on the findings, CST is more optimal when combined with physical activities such as sports.

ACKNOWLEDGMENT

Thanks to all authors for participating in the study.

CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

REFERENCES

- Abraha, I. et al. (2017) "Systematic review of systematic reviews of non-pharmacological interventions to treat behavioural disturbances in older patients with dementia. The SENATOR-OnTop series," *BMJ open*, 7(3), doi.org/10.1136/bmjopen-2016-012759doi.org/10.1136/bmjopen-2016-012759
- Aguirre, E. et al. (2012) "Cognitive stimulation therapy (CST) for people with dementia — who benefits most? Internaional Journal of Geriatric Psychiatry, 28(3),284-290. doi: 10.1002/gps.3823
- Aguirre, E. et al. (2014) "The effects of a Cognitive Stimulation Therapy [CST] programme for people with dementia on family caregivers' health," *BMC Geriatrics*, 14m 31. doi:10.1186/1471-2318-14-31
- Alvares-Pereira, G., Silva-Nunes, M. V. and Spector, A. (2021) "Validation of the cognitive stimulation therapy (CST) program for people with dementia in Portugal," *Aging & Mental Health*, 25(6), 1019–1028. doi.org/10.1080/13607863.2020.1836473
- Apóstolo, J. L., Cardoso, D. F., Rosa, A. I. and Paúl, C. (2014) "The effect of cognitive stimulation on nursing home elders: a randomized controlled trial," *Journal of nursing scholarship : an official publication of Sigma Theta Tau International Honor Society of Nursing*, 46(3), 157–166. https://doi.org/10.1111/jnu.12072
- Bossers, W. J. W. et al. (2017) "Positive effects of combined cognitive and physical exercise training on cognitive function in older adults with mild cognitive impairment or dementia : A meta- analysis," *Ageing Research Reviews*, 40, 75-83. doi: 10.1016/j.arr.2017.09.003
- Capotosto, E. et al. (2016) "Cognitive stimulation therapy in the Italian context : its efficacy in cognitive and non-cognitive measures in older adults with dementia," *International Journal of Geriatric Psychiatry*, 32(3)m 331-340. doi: 10.1002/gps.4521
- Carbone, E. et al. (2021) "Cognitive Stimulation Therapy for Older Adults With Mild-to-Moderate Dementia in Italy: Effects on Cognitive Functioning , and on Emotional and Neuropsychiatric Symptoms," *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 76(9), 1700–1710 doi: 10.1093/geronb/gbab007
- Hall, L. et al. (2013) "Cognitive stimulation therapy (CST): neuropsychological," *International Psychogeriatrics*, 25(3), 479–489. doi: 10.1017/S1041610212001822
- Hodge, S., Hailey, E. and Orrell, M. (2014) "Memory services national accreditation Programme (MSNAP) standards for memory services," London: Royal College of Psychiatrists.
- Legere, L. E. et al. (2018) "Nonpharmacological approaches for behavioural and psychological symptoms of dementia in older adults: A systematic review of reviews," *Journal of Clinical Nursing*, 27(7–8).doi.org/10.1111/jocn.14007
- Livingston, G. et al. (2017) "Dementia

- prevention, intervention, and care,” *The Lancet*, 390(10113).doi.org/10.1016/S0140-6736(17)31363-6
- Marinho, V. et al. (2020) “Cognitive stimulation therapy for people with dementia in Brazil (CST - Brasil): Results from a single blind randomized controlled trial,” *International Journal of Geriatric Psychiatry*, 36(2), 286–293. <https://doi.org/10.1002/gps.5421>
- Okamura, H., Otani, M., Shimoyama, N. and Fujii, T. (2018) "Combined Exercise and Cognitive Training System for Dementia Patients: A Randomized Controlled Trial. *Dementia and Geriatric Cognitive Disorders*, 45(5-6), 318–325. <https://doi.org/10.1159/000490613>
- Orrell, M. et al. (2014) “Maintenance cognitive stimulation therapy for dementia: single-blind , multicentre , pragmatic randomised controlled trial,” *The British Journal of Psychiatry : the Journal of Mental Science*, 204(6), 454–461. <https://doi.org/10.1192/bjp.bp.113.137414>
- Orrell, M. et al. (2017) “The impact of individual Cognitive Stimulation Therapy (iCST) on cognition , quality of life , caregiver health , and family relationships in dementia: A randomised controlled trial,” *The British Journal of Psychiatry : the Journal of Mental Science*, 204(6), 454–461. <https://doi.org/10.1192/bjp.bp.113.137414>
- Park, J., Kim, M. and Shim, H. (2019) “Effects of a Multicomponent Cognitive Stimulation Program on Cognitive Function Improvement Among Elderly Women,” *Asian Nursing Research*, (November), 13(5), 1–7. doi: 10.1016/j.anr.2019.11.001
- Piras, F. et al. (2017) “Efficacy of cognitive stimulation therapy for older adults with vascular dementia,” *Dementia & Neuropsychologia*, 11(4), 434–441. doi: 10.1590/1980-57642016dn11-040014
- Prince, M. J. et al. (2016) “World Alzheimer Report 2016-Improving healthcare for people living with dementia: Coverage, quality and costs now and in the future.” Alzheimer’s Disease International.
- Rai, H., Yates, L. and Orrell, M. (2018) “Cognitive Stimulation T h e r a p y fo r D e m e n t i a,” *Clinics in Geriatric Medicine Clinics in Geriatric Medicine*, 34(4), 653–665. doi: 10.1016/j.cger.2018.06.010
- Spector, A., Orrell, M. and Woods, B. (2012) “Cognitive Stimulation Therapy (CST): effects on different areas of cognitive function for people with dementia,” *International Journal of Geriatric Psychiatry*, 25(12), 1253–1258. <https://doi.org/10.1002/gps.2464>
- World Health Organization (2017) “Global action plan on the public health response to dementia 2017–2025.” World Health Organization.
- Yamanaka, K. et al. (2013) “Effects of cognitive stimulation therapy Japanese version (CST-J) for people with dementia: a single- blind , controlled clinical trial,” *Aging & Mental Health*, 17(5), 579–586 doi: 10.1080/13607863.2013.777395
- Young, D. K.-W. (2020) “Multicomponent intervention combining a cognitive stimulation group and tai chi to reduce cognitive decline among community-dwelling older adults with probable dementia: A multi-center, randomized controlled trial,” *Dementia.*, 19(6), 2073–2089. <https://doi.org/10.1177/1471301218814637>
- Young, D. K. et al. (2018) “The effects of an expanded cognitive stimulation therapy model on the improvement of cognitive ability of elderly with mild stage Dementia living in a community — a randomized waitlist controlled trial,” *Aging & Mental Health*, 23(7), 855–862. <https://doi.org/10.1080/13607863.2018.1471586>