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# Cognitive assessment and intervention in occupational therapy for Thai older adults with neurocognitive disorders

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**ABSTRACT**

**Background**: Occupational therapists (OTs) have a significant role in maintaining clients' well-being. Understanding the current occupational therapy (OT) practice for the elderly with neurocognitive disorders (NCDs) brings effective service.

**Objectives**: This study aimed to explore current OT practice for cognitive assessment and intervention for the elderly with NCDs in Thailand.

**Materials and methods**: This study explored OT practices via questionnaire. Questionnaires were distributed to one hundred and ninety-one OTs throughout Thailand.

**Results**: One hundred and fifty-two occupational therapists (79.87%) responded to the survey. Most worked full-time (94.08%), and 74.34% worked at general hospitals. Participants were more likely to employ standardized cognitive tests (45.33%) than non-standardized assessments (38.00%). Typical standardized tests were screening tests rather than comprehensive tests. The most reported cognitive problem was basic cognition (77.63% to 98.08%). The main cognitive intervention focused on basic cognition (80.92% to 94.74%). Typical interventions were caregiver education (83.89%), physical activity (73.15%), and perceptual retaining (68.46%). Challenges to OT intervention were therapists had poor evaluation skills, unclear intervention guidelines, and an insufficient number of therapists.

**Conclusion**: OTs should participate in further education and develop a guideline and appropriate comprehensive cognitive assessment tools.

## Introduction

Due to the Thai older population increasing,[1] the proportion of healthcare-related to health decline and problems associated with aging will continue to rise. Neurocognitive disorders (NCDs), both 'mild NCD' and 'major NCD', are cognitive decline symptoms that commonly occur in the elderly.[2, 3] In the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5), mild NCD and major NCD are explicit diagnostic terms that explain the underlying continuum of cognitive impairment from normality to severe.[4] NCDs can significantly impact an individual's quality of life (QOL) such as loss of independent life and functional performance.[5, 6] An occupational therapist (OT) has a significant role in encouraging and supporting clients to maintain health and well-being.[7] This role is played based on standard practice which includes four standards. The first standard is professional standing and responsibility. The second standard involves the screening, evaluation, and re-evaluation process. The third standard is the intervention process. Finally, the fourth standard includes transition, discharge, and outcome measurement.[8, 9] According to these four standards, the occupational therapy practice can be divided into three main processes; evaluation, intervention, and outcome.

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There have been past studies about occupational therapy (OT) practice done on patients with NCDs worldwide. In Australia, OTs spent their time on cognitive and functional assessment more than on intervention.[10] Later, Irish OTs also indicated that their assessments were primarily focused on cognitive screening and functional performance.[11] Moreover, in Canada, OTs were more concerned with cognition than functional performance. Assessment practices more often involved the use of cognitive screening tests than domain-specific cognitive assessments tools in all phases because they lacked consensus on cognitive assessment. The study also suggests that guidelines about assessment in NCDs would bring about successful OT interventions.[12] In conclusion, OT practice in those countries is focused on the evaluation process and cognitive screening rather than on intervention and outcome processes.

In Thailand, the Department of Older Persons[13] divided clinical practice for NCDs into five stages: screening, treatment, education, rehabilitation, and long-term care. However, virtually no data is demonstrating OT practice for the client, especially in terms of cognitive assessment and intervention. Therefore, this study aims to explore current OT practices for the client in Thailand. Hopefully, disclosures of the practice can be evidence-based information and used for improving the quality of OT services and will promote initiatives that support OT's role in older clients with NCDs

## Materials and methods

### Participants

The participants were recruited using multistage sampling. First, workplaces were randomly selected. OT workplaces in the list of the Occupational Therapist Association of Thailand (OTAT) were contacted by telephone based on two criteria: (1) There was accessible contact information; and (2) there was OT service available for the elderly with NCDs. Second, OTs in the selected workplaces were purposively sampled using two criteria: (1) they had direct experience in serving cases with NCDs at least one year; and (2) they were willing to participate in this study. One hundred and ninety-one therapists were recruited.

### Instrumentation

The questionnaire was modified from Bennett *et al*.[10] The contents were composed of three domains: assessment, intervention, and outcome. It was presented through four parts: general information, work experiment information, assessment, and intervention. After that, it was examined for content validity by three experts. The first expert is an OTs who has serviced older adults with NCDs for more than ten years and had experience in using standardized cognitive measurements. The other two experts were OT lecturers who had worked for at least five years and had experience in providing both cognitive training programs and using standardized cognitive assessments. The questionnaire was then revised and was piloted by five OTs who were not participants in this study.

### Procedures

This study was approved by the Ethics Committee of the Faculty of Associated Medical Sciences, Chiang Mai University, with the study code of AMSEC-61FB-001. This study is a cross-sectional research design. The questionnaires were distributed to all participants. This survey was kept open for four weeks. The participants were reminded through OT's social media networking sites to complete the questionnaire by one week and three days before the closing date to get the maximum response rate. The acceptable minimum response rate is 75.8% based on the study of McGrath and O'Callaghan.[11] The data were analyzed using descriptive statistics.

## Results

One hundred and fifty-two occupational therapists (79.87%) responded to the survey. Table 1 illustrates that most of the participants were female (74.34%), worked full-time (94.08%), and worked at general hospitals (74.34%). Their main caseload was elderly with 'stroke and TBI' and 'NCDs', at 96.71% and 76.97%, respectively. Most cases with NCDs were classified as mild symptoms. The vast majority of the participants (76.16%) treated the elderly with NCDs at 1-5 cases per week, each case was served for 1-2 sessions a week (69.54%), and each session took 30-60 minutes (84.11%). Moreover, most of the participants cared for both the clients and their caregivers (84.00%).

**Table 1** Demographic and working information (n=152).

| | n | (%) |
|---|---|---|
| **Gender** | | |
| Female | 113 | (74.34) |
| **Main practice setting** | | |
| General hospital | 113 | (74.34) |
| Private hospital | 20 | (13.16) |
| Nursing home | 6 | (3.95) |
| **Employment status** | | |
| Fulltime | 143 | (94.08) |
| **Number of Caseloads** | | |
| Elderly with Stroke and TBI | 147 | (96.71) |
| Elderly with NCDs | 117 | (76.97) |
| **Stage of the symptom of the case with NCDs** | | |
| Mild NCD | 127 | (83.55) |
| Major NCD in the mild stage | 121 | (79.61) |
| Major NCD in the moderate stage | 86 | (56.58) |
| Major NCD in late stage | 53 | (34.87) |
| **Number of NCDs case per week** | | |
| 1-5 cases | 115 | (76.16) |
| 6-10 cases | 15 | (9.93) |
| More than 10 cases | 13 | (8.61) |

**Table 1** Demographic and working information (n=152). (continues)

| | n | (%) |
|---|---|---|
| **Number of services for NCDs case per week** | | |
| 1-2 session(s) | 105 | (69.54) |
| 3-5 sessions | 23 | (15.23) |
| Everyday | 13 | (8.61) |
| **Length of service per session** | | |
| Less than 30 minutes | 14 | (9.27) |
| 30-60 minutes | 127 | (84.11) |
| More than 60 minutes | 10 | (6.62) |
| **Service pattern** | | |
| Only elderly | 22 | (14.67) |
| Only caregiver | 2 | (1.33) |
| Together | 126 | (84.00) |

**Table 2** Number of using cognitive standardized tests used (one or more options) (n=151).

| | n | (%) |
|---|---|---|
| **Screening tests** | | |
| MMSE | 75 | (49.70) |
| MoCA | 59 | (39.10) |
| TMSE | 52 | (34.40) |
| **Comprehensive tests** | | |
| Thai-CPT | 40 | (25.82) |
| LOTCA | 12 | ( 7.95) |
| **Both screening and comprehensive tests** | | |
| MMSE and Thai-CPT | 14 | (10.50) |
| MoCA and Thai-CPT | 13 | ( 8.61) |

***Note:*** *MMSE = Mini Mental State Examination-Thai version; MoCA = Montreal Cognitive Assessment Thai version; TMSE = Thai Mental State Examination, Thai-CPT = Thai Cognitive-Perceptual Test, LOTCA = Loewenstein Occupational Therapy Cognitive Assessment*

**Cognitive assessment practice**

Figure 1 shows sixty-eight participants (45.53%) employed standardized cognitive tests while fifty-seven (38.00%) used non-standardized cognitive assessment. Twenty-five participants (16.67%) used both assessment types. Table 2 represents that the participants used standardized cognitive screening tests such as the Mini Mental State Examination (MMSE)-Thai version (49.70%), the Montreal Cognitive Assessment (MoCA)-Thai version (39.10%). Only two comprehensive cognitive tests mostly used were the Thai Cognitive-Perceptual Test (Thai-CPT) (25.82%) and the Lowenstein Occupational Therapy Cognitive Assessment (LOTCA) (7.95%).

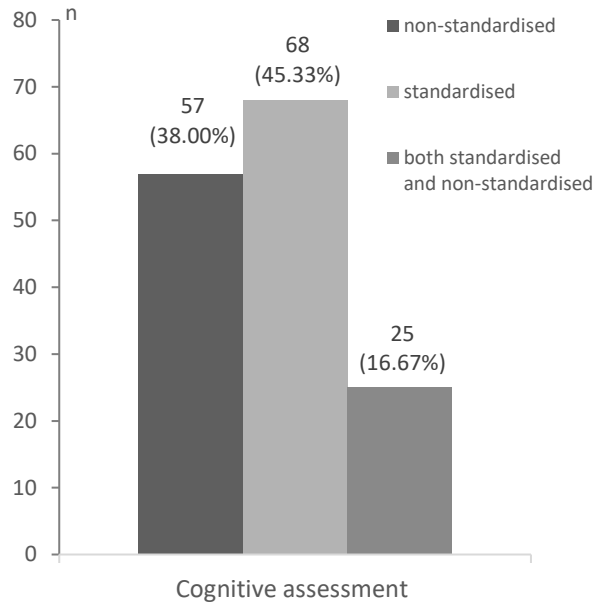


***Figure 1****. Type of assessment tool (n=150).*

**Cognitive intervention practice**

Three main domains; memory, orientation, and attention, were intervened at 94.74%, 89.47%, and 80.92%, respectively (Figure 2). The most frequent cognitive intervention forms were individual treatment (49.67%) and individual mixed with group activity 46.98%). Typical cognitive interventions were caregiver education (83.89%), perceptual retaining (73.15%), and physical activity (68.46%) (Table 3). In addition, the participants reported that lacking knowledge, skills, intervention guidelines, and insufficient number of OTs were therapist's challenges. Clients' barriers included not understanding the role of OT, but also accessing OT services. Additionally, a lack of resources was the main institute's barrier. Furthermore, the participants also indicated that cognitive intervention would be effective if the client understood and corresponded with OT, therapists updated their knowledge and skills, and institute supported resources. In addition, they also recorded the need of further education about cognitive problems, standardized OT cognitive assessment tools, and cognitive intervention guidelines to care for the cases at each stage.

**Discussion**

The findings of this study that most occupational therapists worked full-time in hospitals and the majority of cases with NCDs were in early stages, are similar to findings in Australia and Ireland.[10, 11] This might be because the main duty of general hospitals is not specific to the NCDs cases but instead is focused on managing critical cases such as stroke and TBI.[11, 14] In addition, NCDs cases in later stages, who had more ADL's impairment, were typically cared for in nursing homes or communities rather than in hospitals.[15] Therefore, it might be noted that Thai OTs had a lower chance of receiving the NCDs cases in later stages. A difference issue that found from this study was that most of the occupational therapy services for the elderly with NCDs

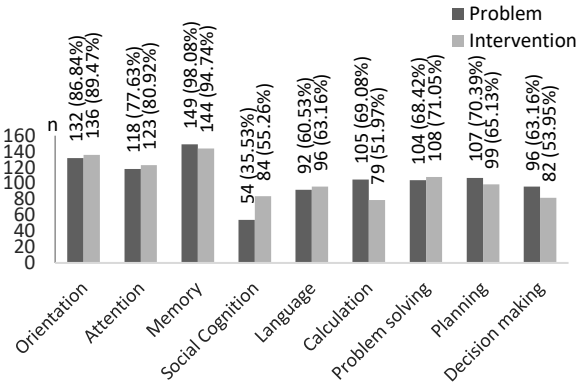


***Figure 2***. *Cognitive problem which has been found and intervened (n=152).*

**Table 3** Cognitive intervention (n=149).

| | n | (%) |
|---|---|---|
| **Intervention forms** | | |
| Only individual | 74 | (49.67) |
| Only group | 3 | (2.01) |
| Both individual and group | 70 | (46.98) |
| **Common intervention (one or more options)** | | |
| Caregiver education | 125 | (83.89) |
| Perceptual retraining | 109 | (73.15) |
| Physical activities | 102 | (68.46) |
| Patient education | 91 | (61.07) |
| Environmental modification advice | 91 | (61.07) |
| Compensatory techniques | 81 | (54.36) |
| Card games | 75 | (50.34) |

of the other countries were serviced outside general hospitals. As findings of McGrath & O'Callaghan[11] and Gately &Trudeau[16] that large numbers of OTs worked in communities and nursing homes, moreover, greater amounts of their NCDs cases were in later stages. This indicates that Thai society might need more occupational therapists who worked in nursing homes or geriatric hospitals.

A finding that the participants often cared for the cases together with their caregivers might be because caregivers were an important part of the multidisciplinary team. According to the biopsychosocial model proposed by Grand, Caspar, and Macdonald,[17] the role of caregivers is to understand ways to improve life quality and to reduce additional disabilities. Caregivers are individuals who take the elderly to health care professionals, facilitate home treatment, and are key observers of progressive symptoms. Moreover, they are invisible patients who might become ill from providing full-time care. Therefore, they also need care and support.

It was surprising that participants in this study used standardized tests slightly more than non-standardized assessments even though there is a lack of standardized cognitive tests in Thailand. Standardized cognitive tests that were typically used were the MMSE-Thai version, the MoCA-Thai version, and the Thai-CPT. This may be because these tests are available in Thai language with no cultural bias. McGrath and O'Callaghan[11] suggested that therapists should employ standardized assessments to encourage accuracy of result discrimination and to ease communication with a multidisciplinary team. However, the screening tests were used more often than domain-specific comprehensive tests. These results are similar to the findings of Belchior, Korner-Bitensky, Holmes, and Robert[12] which indicated a lack of consensus on assessment practice. Additionally, this might result from good properties of the screening test; simple, readily available, user-friendly in the limited care time, and appropriate for the elderly.[18] However, screening tests cannot be used to gain detailed information about the severity of cognitive difficulties, and have limitations in detecting cognitive change over time.[19] Therefore, domain-specific comprehensive tests are necessary for cognitive intervention.

Problems in basic cognition such as memory, orientation, and attention were found in the cases. Some participants reported in open-end questions that they could not find overall cognitive problems regarding cases with NCDs by

using only the screening tests or a comprehensive tests. In the same way, they reported that the Thai-CPT was not suitable for the cases because it was developed to assess cognitive functions of Thai brain injury patients.[20] Consequently, participants have to use more than one assessment tool to find the client's cognitive status. Therefore, to assess cognition of the clients in OT, a test that can report comprehensive information and is appropriate to the case is required.

According to most of the participants working in general hospitals, they could service the client for just only an hour or less for 1-2 sessions weekly. However, with regards to a systematic review by Butler *et al*,[21] treatment one session a week for 12 weeks cannot make any difference but 2 sessions a week for 12 weeks can improve some cognitive functions. A systematic review by Möllers *et al*.[22] revealed that the longest length of stay in general hospitals of people with major NCD was less than six weeks. It is interesting to note that intervention programs of the participants in this study might not reach the optimal sessions to effectively delay symptoms. Therefore, it is recommended that the optimal frequency of cognitive intervention should be at least 2 sessions a week for 12 weeks, and those might be done in the form of a home program or follow-up sessions in outpatient units.

One important finding was that more cognitive interventions focused on basic cognitions such as memory, orientation, and attention, compared with executive functions. This might be because participants did not have enough time to give service for higher cognitive function in their clinical practice at hospitals due to fast discharge policies. Due to time limitations, the participants could focus only on the distinct cognitive impairments such as memory, orientation, and attention. Furthermore, executive functions are far more complicated to understand and to treat than basic cognitions.[23] The participants reported that they had insufficient skills in treating higher cognitive functions. In addition, guidelines for cognitive intervention are still lacking.

Another interesting feature was the intervention format. The reason why the participants chose individual formats was that they needed a one-on-one environment. Cognitive intervention requires a specific, quiet, and intense environment.[24] Furthermore, the reason why they combined individual and group intervention was that some group activities were necessary for the treatment. Sometimes the clients were interested in participating in group activities, and they needed a group climate to enhance their cognition. Haslam and colleges[25] explained that group activities could improve and maintain subsequent cognitive function in older adults and can slow cognitive decline. Furthermore, in a situation where the participant has limited resources and service time, group intervention is a potential approach to provide services more efficiently.[26]

The top three cognitive interventions were caregiver education, perceptual retraining, and physical activity. Since the caregiver is important in the multidisciplinary team, they should be educated in every aspect of care.[21] Perceptual retraining was frequently used because improving perception could benefit cognition. Allen and Roberts[27] concluded that both auditory and visual perception training could make positive changes in cognition. Additionally, physical activity was shown in evidence-based studies to enhance cognitive functions. For example, the study of Gheysen *et al*.[28] found that integrating physical activities such as dancing or tai-chi with cognitive training programs could enhance cognition in an older adult.

Significant findings of this study were that some participants reported insufficient knowledge and skills. In addition, they stressed the need for further education and more up-to-date knowledge attainment about cognitive intervention for NCDs. These findings are similar to the findings of Bennett *et al*.[10] It can be noted that not only OTs in other countries, but Thai OTs also should gain overall skills and knowledge to clarify the role of OT for cognition in older adults with NCDs.

## Conclusion

From this study, Thai OTs paid attention on increasing numbers of older clients with NCDs, although they were not the main caseload in the hospital. Cognitive outcome assessment was rarely used because there were no available outcome measures that could provide clear information to be an official document. Therapists reported insufficient skills, lack appropriate guidelines and resources, and clients did not understand the role of OT were challenges of intervention. It is suggested that Thai OTs should heighten their awareness of their roles through further education and should develop appropriate cognitive assessment tools and intervention guidelines.

## Conflicts of Interest

The authors declare no conflict of interest regarding the publication of this paper.

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