Cadernos Brasileiros de Terapia Ocupacional
Brazilian Journal of Occupational Therapy

ISSN 2526-8910

Original Article

Development and analysis of group intervention in occupational therapy for elderly with mild neurocognitive disorder[1]

Desenvolvimento e análise de intervenção grupal em terapia ocupacional a idosos com transtorno neurocognitivo leve

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How to cite: Alves, M. C. A., Almeida, M. H. M., Exner, C., Toldrá, R. C., & Batista, M. P. P. (2020). Development and analysis of group intervention in occupational therapy for elderly with mild neurocognitive disorder. *Cadernos Brasileiros de Terapia Ocupacional*. *28*(1), 187-206. https://doi.org/10.4322/2526-8910.ctoAO1865

Abstract

Introduction: The rapid advance of the aging process contributes to the increase of chronic-degenerative diseases, such as Mild Neurocognitive Disorder (MND). Elderly with MND may present difficulties in performing instrumental activities of daily living and social participation, in addition to a higher conversion rate for dementias, compared to healthy elderly individuals. **Objective:** To describe and analyze a group intervention in Occupational Therapy with elderly with probable MND. **Method:** Prospective, quantitative, quasi-experimental study of "before and after" conception. A total of two interventions were carried out at the University Hospital of the Universidade de São Paulo, in 2014 and 2015. Each intervention covered 8 meetings and had the participation of 11 elderly. Dynamics were used to sensitize the tasks and cognitive abilities most affected in the elderly with MND and to share compensatory mnemonic strategies. For the analysis of the interventions, the instruments were applied before and after: Rivermead Memory Behavior Test; Pfeffer's Questionnaire and Subjective Memory Complaints Questionnaire. For intragroup statistical analysis, we used the Shapiro-Wilk and the non-parametric Wilcoxon tests. **Results:** There was a statistically significant change in total score of all the instruments applied. Thus, it showed the improvement of cognitive performance, improvement of ability in

[1]According to the research norms proposed by the *Conselho Nacional de Saúde* of Brazil, the research project was approved by the *Comitê de Ética da Faculdade de Medicina da Universidade de São Paulo* under the opinion of approval nº. 402/13, on 09/10/2013.

Received on Jan. 2, 2019; 1st Revision on Apr. 1, 2019; Accepted on Apr. 29, 2019.

instrumental activities performance that involve more directly cognitive abilities and reduction of subjective complaints of memory of participants. **Conclusion:** Intervention is a potent resource for the intervention of the occupational therapist with the elderly with MND, favoring independence in daily occupations, reduction of memory complaints and improvement in cognitive performance.

Keywords: Occupational Therapy, Mild Neurocognitive Disorder, Activities of Daily Living, Cognition, Rehabilitation.

Resumo

Introdução: O rápido avanço do processo de envelhecimento contribui para o aumento das doenças crônico-degenerativas, como o Transtorno Neurocognitivo Leve (TNL). Idosos com TNL podem apresentar dificuldades no desempenho de atividades instrumentais de vida diária e de participação social, além de índice de conversão maior para demências, comparados a idosos saudáveis. **Objetivo:** Descrever e analisar intervenção grupal em terapia ocupacional a idosos com provável TNL. **Método:** Estudo prospectivo, quantitativo, quasi-experimental de concepção "antes e depois". Analisaram-se em conjunto duas intervenções realizadas no Hospital Universitário da Universidade de São Paulo, em 2014 e 2015. Cada intervenção abrangeu 8 encontros, com participação de 11 idosos ao todo. Foram utilizadas dinâmicas para sensibilização acerca de tarefas e habilidades cognitivas reconhecidamente mais afetadas em idosos com TNL e compartilhamento de estratégias mnemônicas compensatórias. Para análise das intervenções, aplicaram-se antes e depois os instrumentos: Teste Comportamental de Memória de Rivermead; Questionário de Pfeffer e Questionário de Queixas Subjetivas de Memória. Para análise estatística intragrupo, foram utilizados o teste de Shapiro-Wilk e o teste não-paramétrico de Wilcoxon. **Resultados:** Houve mudança estatisticamente significativa no escore total de todos os instrumentos aplicados. Assim, houve melhora do desempenho cognitivo, melhora da capacidade no desempenho de atividades instrumentais que envolvem mais diretamente habilidades cognitivas e redução das queixas subjetivas de memória dos participantes. **Conclusão:** Acredita-se que a intervenção é um potente recurso para atuação do terapeuta ocupacional junto a idosos com TNL por favorecer independência nas ocupações cotidianas, diminuição de queixas de memória e melhora no desempenho cognitivo.

Palavras-chave: Terapia Ocupacional, Disfunção Cognitiva, Atividades Cotidianas, Cognição, Reabilitação.

1 Introduction

In recent decades, there has been a significant increase in human life expectancy, as well as the worldwide progression of the elderly population (Organização das Nações Unidas, 2017; Brasil, 2007). In this context, the number of elderly with chronic degenerative diseases grows (Chaimowicz, 1997; World Health Organization, 2011). Among these, diseases that affect cognition stand out, such as Mild Neurocognitive

Disorder (MND) (Petersen et al., 2001). A review study on the prevalence of MND in Brazil, found a rate of 6.1% in people of 60 years old and older, similar to the international scenario (Brucki, 2013).

To discuss the controversies related to the diagnosis of MND, the Stockholm Symposium defined the following criteria: the person does not have normal aging or meets the criteria for dementia; there is evidence of decline, identified by objective measures and/or self or others' report of complaints plus objective cognitive *deficit*; basic activities of daily living are preserved and activities that are instrumental and complex of social participation may be preserved or slightly hampered (Winblad et al., 2004). According to the American Psychiatric Association (2014), elderly with MND present, among other aspects, cognitive complaints not compatible with normal aging, lack of dementia diagnosis and independence preserved to perform their occupations.

By *occupation,* we mean the various types of daily activities in which subjects engage, such as instrumental activities of daily living (IADL) and those that involve social participation. The former refers to activities that support daily living at home and in the community, for example, community mobility, health and financial management, and shopping. Social participation relates to the involvement of the individual in activities that cover social situations with the community, family, peers and friends (American Occupational Therapy Association, 2015). Although cognitive decline does not interfere with independence in everyday occupations, it is possible that the individual with MND needs more effort to perform them than previously, especially instrumental activities of daily living, such as managing their own money, paying bills and taking medications (American Psychiatric Association, 2014).

In addition, mnemonic tasks, such as remembering names of unfamiliar people, giving messages, retaking tasks after interruption (Farias et al., 2006) and cognitive skills, such as attentional ones (American Psychiatric Association, 2014), executive function for organization and planning activities (Schmitter-Edgecombe et al., 2012; Aretouli & Brandt, 2010), memory and language, such as comprehension and naming (American Psychiatric Association, 2014; Farias et al., 2006) may also be impaired in this population, when compared to healthy elderly, which can interfere with their social participation.

Although effective drugs to prevent MND progression have not yet been identified (Clemente & Ribeiro-Filho, 2008), some studies suggest that activities of cognitive stimulation may maintain or improve cognitive and functional performance of these people (Buschert et al., 2011; Rodríguez et al., 2012; Rojas et al., 2013). Considering that elderlies with MND present a higher conversion rate to dementia syndromes when compared to healthy elderlies (Godinho, 2012; Small et al., 2007), such cognitive intervention proposals represent a treatment option to optimize occupational performance and slow conversion to dementia.

Another factor that contributes to the development of interventions with elderly with MND is the recognition that these individuals, while still maintaining a wide range of cognitive abilities and being aware of their functional difficulties, are able to elaborate as well as acquire and maintain knowledge about strategies that improve neurocognitive performance in everyday life (Troyer et al., 2008).

The occupational therapist, as a member of the multidisciplinary team, may conduct individual or group interventions with old people with MND, focusing on

strategies that improve performance on mnemonic tasks and daily activities that require greater cognitive demand. Thus, this professional helps to reduce the impact of cognitive decline on daily activities, contributes to maintain the elderly independence and autonomy and to improve their cognitive and functional aspects, which contributes to quality of life (Exner et al., 2018). In addition, interventions by occupational therapists to stimulate the cognitive functions of elderly people can positively influence the participants' mood (Meneses et al., 2013).

Despite these claims, the topic of MND is still incipient in specific national and international occupational therapy journals. In Brazil, we only identified two research papers in specific national occupational therapy journals related to the MND population (Exner et al., 2018; Meneses et al., 2013). Despite the great relevance of these works to the area, it was observed that the first study reported interviews with occupational therapists working with this population, but did not contemplate specific intervention (Exner et al., 2018). The second study presented intervention through computer games, however, few games specifically emphasized daily activities, and there was no statistical improvement in the cognitive performance of the elderly after the intervention (Meneses et al., 2013).

Given the relevance of occupational therapy interventions to elderly with MND, this study aimed to describe and analyze together two group interventions of this professional performed with this population, hereinafter treated as group intervention. The expected result of the intervention was to improve cognitive performance with respect to mnemonic function, reduce subjective memory complaints, as well as improve ability to perform IADL that involves cognitive skills more directly.

2 Method

2.1 Study design

This is as prospective, quantitative, quasi-experimental study, of "before and after" conception. The study was funded by the *Programa Institucional de Bolsas de Iniciação Científica* (PIBIC) in 2014/2015, with the granting of an undergraduate scholarship.

The project was submitted and approved by the *Comitê de Ética em Pesquisa da Faculdade de Medicina da Universidade de São Paulo*, under number 402/13, date of approval 09/10/2013. All participants signed the Informed Consent Form.

2.2 Intervention

Two group interventions were performed, in the second semester of 2014 and first semester of 2015 respectively, conducted in a standardized way at the University Hospital of the *Universidade de São Paulo* (HU-USP).

Each intervention was conducted by an undergraduate student of occupational therapy of PIBIC and two occupational therapists resident in the *Programa de Residência Multiprofissional em Promoção da Saúde e Cuidado na Atenção Hospitalar* - Concentration Area: Adult and Elderly Health, Department of Physiotherapy, Speech Therapy and Occupational Therapy, *Faculdade de Medicina da Universidade de São*

Paulo. An occupational therapy professor and an occupational therapist, active in the field of gerontology and responsible for the project, supervised them.

Each of the interventions involved 8 weekly meetings of 2 hours each. The meetings elaboration and the interventions structure were based on a bibliographic survey on the theme in specific national and international occupational therapy journals and on the content of interviews conducted with occupational therapists working with elderly people with MND (Exner et al., 2018).

The interventions aimed to offer the participants compensatory mnemonic strategies to cope with difficulties in occupations that are known to be most affected in elderly people with MND, that is, those related to instrumental activities of daily living (IADL) and those involving social participation, which clearly demand cognitive abilities. In addition, we emphasized the mnemonic tasks and cognitive skills that may change in elderly with MND, as described in the literature (Farias et al., 2006; Schmitter-Edgecombe et al., 2012; Aretouli & Brandt, 2010; Exner et al., 2018). We also sought to reflect on the difficulties for their performance and on compensatory strategies used by the elderly, emphasizing the unique daily life of each participating elderly.

To favor the consolidation of the content covered and the elderlies' learning process, at the end of each meeting we delivered summaries of the guidelines provided and a task to perform at home. In addition, at the beginning of each meeting, the elderlies were encouraged to rescue the concepts discussed in the previous week and to share the task performed at home. The following Table 1 shows the content emphasized in the meetings.

Table 1. Occupations, respective mnemonic tasks and cognitive skills addressed in the meetings.

OCCUPATION		**MNEMONIC TASKS AND COGNITIVE SKILLS**
SOCIAL PARTICIPATION		Remembering faces and names
		Keeping abreast of events and surroundings
		Remembering appointments
INSTRUMENTAL ACTIVITIES OF DAILY LIVING	Home Management	Keeping and finding objects
	Financial Management	Remembering to pay bills
	Community Mobility	Planning route, moving in community ensuring leaving and returning home
	Going shopping	Remembering shopping items
	Preparing Meal	Properly planning, preparing and serving meals
	Communication management	Paying attention and giving a message received
	Health management and maintenance	Remembering to take prescribed medicine

The following is a description of the contents approach and strategies used in each of the meetings:

- **Remembering faces and names:** The elderlies, separated into small groups were asked to reflect on the difficulties and strategies for memorizing the names given to them. Later, they should share among them the strategies considered. This reflection was complemented with other mnemonic strategies. In addition, the elderlies were asked to use the strategies they shared to learn the names of the other participants in the group and people from their informal network, especially those with little contact, in order to greet them by name. The **strategies** emphasized in this meeting were: using multiple senses to favor attention, planning and organization of ideas; using antonyms, synonyms, rhymes, repetition to favor language (naming); association (for example: with names of known people, characters, songs, words that begin with the first letter or syllable of first and last name); mental construction of images or stories; attributing emotion to the information and using external memory devices such as diaries, notebooks and schedules;
- **Keeping abreast of events and surroundings:** It began with the theoretical conceptualization of the difference between selective, alternate and divided attention, and its influence on memorization and performance of everyday activities. Subsequently, we discussed the influence of selective attention on information capture, storage and recall. They watched video with current news in two stages: with and without interference from distracting environmental stimuli. We sought to stimulate reflection on the influence of distracting stimuli (internal and environmental) on attention; the difficulties or failures in the performance of daily activities when dividing attention; the relationship between attention, environmental organization and activity planning. We also emphasized the importance of expanding the network of contacts, circulating in the territory and involving in activities in the community. We shared and reinforced the strategies used and complemented with others, prioritizing the use of selective and/or alternate attention over the divided attention; using multiple senses to favor selective attention; encouraging self-perception (eg, sleep, fatigue, anxiety) and its influence on attention and distracting stimuli; association; mental construction of images or stories; attributing emotion to information;
- **Remembering appointments:** The elderlies, divided into small groups were asked to reflect on the feelings involved with the difficulty in remembering appointments, such as medical appointments, family events, and commemorative dates. They had to complete a half-yearly calendar with their commitments, including group membership. While they filled it up, they were encouraged to share other services of the network to which they belong, with emphasis on spaces for social participation. We encouraged them to share strategies such as task prioritization and activity redistribution over time; planning; reinforcing use of selective attention; repetition; environmental organization; using multiple senses and adopting external memory devices such as schedule, list, calendar, activity diary, alarm clock, timer and others;
- **Keeping and finding objects:** There was a conversation round about the importance of environmental organization and its impact on routine. We sought to discuss the influence of environmental disorganization on the negative perception

of memory, as well as on the emotional impact of the failure of a given task. They present and shared **strategies** that facilitate environmental organization and finding objects, such as: using selective attention, environmental organization and planning; using environmental clues such as labels; adopting external devices such as organizer boxes, document files, calendars; definition of specific places to keep personal objects, especially those that usually have difficulty remembering where they put them; sensitization for self-perception of feelings that arise when they do not find objects, such as anxiety, worry, anger;

- **Remembering to pay bills:** There was a conversation round about planning the steps and resources needed for financial control, especially for paying bills on time. We sought to reflect on the influence of non-payment of bills on the perception of memory and emotions they cannot perform this task. There was a discussion about the help of financial management through the informal network and its impact on routine. The **strategies** emphasized were: planning and dividing the activity and task in stages; reinforcement of attention, repetition, environmental organization and the use of external devices such as document folders, calendar and expense control worksheets; using technology to facilitate planning, such as specific electronic applications for finance management; evaluating the need to pay the bills by into automatic debit; adopting partition as a strategy for password memorization; informal network mapping to assess the need for help with financial management;
- **Planning route, moving around the community ensuring leaving and returning home:** we presented and shared strategies for route planning and remembering everyday routes and emphasis on the creation of memory trails. We performed a route inside the hospital with the elderlies, to reach the group room, paying attention to the strategies addressed and sharing experiences. We reflected on the behaviors to reduce risks when they have difficulty locating themselves in the territory. The **strategies** emphasized were to focus attention and create a register/mental image of the place; identification of landmarks; planning of risk reduction actions, such as bringing emergency contact telephones and enhancing their memorization using the strategies of repetition, partition, association and use of multiple senses; use of technological resources such as GPS and location sites; sharing technological tools for mapping car and public transportation routes;
- **Remembering shopping items:** There was a presentation and sharing of the importance of using a list and the categorization and simulation of purchasing activity, with and without the use of lists. We tried to discuss in which situations it would be possible use the list and deconstruct the idea of memory devices as a "crutch", sensitizing their adoption by the elderlies. In this aspect, we reflected that the use of memory devices favors the capture, storage and recall of information, as well as it reduces the concern about forgetting temporary information. We stimulated self-perception of the emotional aspects that lead to negative perception of memory in the face of everyday forgetfulness that could potentially be avoided using devices. As **strategies**, we emphasized categorization and use of list as external memory device; reinforcement of environmental organization, planning, repetition, use of multiple senses and attention;

- **Properly planning, preparing and serving meals:** The elderlies received a recipe with out-of-order steps. They had to place them in proper sequence. They were asked to plan what actions would be needed to offer a dinner for two, including knowing what and when to put the ingredient in the recipe, remembering to put out the fire, what steps and utensils would be needed to prepare it and perform the task. The **strategies** emphasized were: categorization; use of external devices such as timer and list; use of environmental organization and planning; reinforcement of attention;
- **Paying attention and giving a message received:** The elderly were asked to retell a news story they received, which was accomplished during the meeting with and without the adoption of compensatory strategies. We sought to discuss the difficulties, present compensatory strategies and share others used by the group. They reflected on the difficulty of transmitting information to others, such as telling about a newspaper article or radio and television news, and issuing a telephone message and its impact on daily life. As **strategies**, we emphasized the use of selective attention and the attribution of emotion to information; planning and organizing ideas aimed at favoring language through word choice, naming; identification of key ideas and questions; mental construction of images or stories; association with known information; discard of details; generalization of information; use of external memory devices such as diary, notebook and notes;
- **Remembering to take prescribed medicine:** We discussed the difficulties in taking medicine. Compensatory strategies were presented to the group and we encouraged them to share those used by the elderlies. There was simulation of medicine organization activity. The **strategies** emphasized were: reinforcement of environmental organization, planning, attention and use of multiple senses; using external memory devices that facilitate taking the medicine as prescribed, such as organizing boxes, pill cutters, use of calendar, alarm clock, activity diary, lists with questions to take to health professionals appointments; assessment of the need for the informal network to help remember to take medicines; use of technological resources, such as specific medication management applications.

2.3 Participants

The intervention carried out in 2014 had six elderlies as participants and in 2015 intervention there were five. Thus, the subjects with probable MND who participated in the groups were evaluated as a whole, composing the paired dependent samples of this study. In this sense, the before and after paired samples were composed of 11 subjects.

For the study, the elderlies recruited were registered in the databank of *Ambulatório de Prevenção de Quedas* at HU-USP and/or the *Programa de Estimulação à Memória e Funções Cognitivas Relacionadas*, offered by *Laboratório de Estudos e Ações em Terapia Ocupacional e Gerontologia* (Geron–TO), of the Occupational Therapy Course at USP, the latter being described by Sato et al. (2014).

These databases contained the scores of the elderlies in the Mini Mental State Examination (Folstein et al., 1975). The elderlies who had alterations in this test up to a

maximum of three points below the normal compatible score according to their school level were invited for an individual evaluation. Clinical Dementia Rating tests - CDR (Hughes et al., 1982), the Geriatric Depression Scale - GDS-15 (Sheikh & Yesavage, 1986), and semi-structured questions aimed at knowing the occupational universe of the elderlies were applied, seeking to raise their basic and instrumental activities of daily living and social participation, as well as cognitive complaints related to their performance. The elderlies who presented CDR score compatible with questionable dementia were invited to the group (obtaining 0.5 as a score), without alteration in the GDS-15 test. The elderlies without cognitive complaint for performing the basic and instrumental activities of daily life of social participation were included, as well as those who complained of the instrumental and social participation activities that, according to the elderlies, had little influence on their occupational performance. We excluded the elderlies who were diagnosed with dementia and/or depression; those on psychiatric follow-up; those using controlled medication that interfered with cognition and those who had cognitive complaints referred to perform the basic activities of daily living. The elderlies who met the inclusion criteria were invited to the group intervention.

2.4 Instruments

For assessment and reassessment before and after the intervention, we used the following instruments:

1) In order to assess cognitive performance through the level of mnemonic function, we applied the Standardized Rivermead Behavioral Memory Test - Version A (assessment) and Version B (reassessment), validated in Brazil by Yassuda et al. (2010). Different versions of the test were applied to minimize the effect of retesting (Lima-Silva & Yassuda, 2012). This instrument was developed to detect daily memory deficit and to assess the impact of interventions that focus on memory impairment (Küçükdeveci et al., 2008). The Standardized Rivermead Behavioral Memory Test (RBMT) consists of twelve items, which require the individual to remember: (1) first and last name of a person showed in a photograph after break; (2) ask for personal belongings at the end of the test session and ask where it was kept; (3) specific question (such as next appointment date) after 15 minutes at the sound of an alarm; (4) 10 objects out of 10 distractors; (5) short newspaper news immediately and (6) after break; (7) 5 faces between 5 distractors; (8) immediate way; and (9) late way, memorizing the sequence of a 5-stage route in a room; (10) leave the message (envelope) at a specific stage of the way; it also requires answering the questions of (11) spatial and (12) temporal orientation (Yassuda et al., 2010). To calculate the score, each item can range from 0 to 2, with two points indicating normal; one point means intermediate performance ("borderline") and zero abnormal point. The overall test score ranges from 0 to 24 points, being 24-22 normal, 21-17 poor memory, 16-10 moderately impaired, 9-0 deeply impaired;
2) In order to assess subjective memory complaints, we applied the MAC-Q Subjective Memory Complaints Questionnaire (Crook et al., 1992). Based on six questions, the respondent is asked to compare their current memory with their 40-year-old memory: (1) Remember the names of people they have just met;

(2) Remember the phone number they use at least once a week; (3) Remember where they placed objects; (4) Remember news from a magazine or television; (5) Remember things they intended to buy when they arrive at the venue; (6) In general, how would you describe your memory compared to 40 years old? Each question provides five answer options, varying on a 5-point Likert scale, with the last question equivalent to twice the corresponding value. The total score of the questionnaire ranges from 7 to 35 points, considering that the lower the result, the better the memory perception. Scores between 15 and 25 points represent memory difficulties (memory complaints) and greater than 25 points, a negative memory perception (presence of memory dysfunction) (Crook et al., 1992);

3) In order to evaluate the functionality through the degree of ability of the elderlies to perform IADL that involve cognitive skills more directly, the Pfeffer Questionnaire - QPAF (Pfeffer et al., 1982) was applied. It corresponds to an evaluation with 11 questions about the ability of the elderlies to perform certain functions: (1) Taking care of their own money; (2) Doing shopping by themselves; (3) Heating water for coffee or tea and turning off the heat; (4) Preparing food; (5) Keeping abreast of events and what is going on in the neighborhood; (6) Paying attention to, understand and discuss a radio, television or newspaper article; (7) Remembering family commitments and events; (8) Taking care of their own medicines; (9) Walking around and finding their way back home; (10) Greeting their friends properly; (11) Being alone at home without problems. Answer options range from 0- Yes, they are able/ Never did it, but could do now; 1- With some difficulty, but they do it/Never did and would have difficulty now; 2- Needs help; 3- Not able. The maximum score is 33 points, and the lower the score obtained by the individual, the greater their independence, as opposed to the higher scores (six or more), which suggest greater dependence (Pfeffer et al., 1982).

The instruments were administered individually by the same examiner in the assessment and reassessment, with an average duration of 1 hour in total. This examiner was the occupational therapy undergraduate scholar who was trained by the project managers to apply the instruments.

2.5 Data analysis

Data from both interventions were organized and analyzed together as a single intervention with the aid of the Statistical Package for the Social Sciences (SPSS) version 20. Continuous variables were described based on mean and standard deviation; categorical variables were described with absolute and relative frequencies.

Shapiro-Wilk test was applied to verify data normality. After confirming the abnormal distribution of data, the Wilcoxon nonparametric test for paired samples was used for initial and final intra-group comparison, both by items and by total score in all instruments used. For these data, the median and interquartile range will be shown, often used in the presentation of data resulting from nonparametric tests. For all analyzes, a significance level of 5% ($p < 0.05$) was adopted.

3 Results

Table 2 below shows the social and demographic data of the participants in this study. Most were female, average age of 73 [61-64) - SD 7.141, aged 60-79 years old and with incomplete elementary school I and II.

Table 2. Social and demographic data of the participants.

Social and demographic variables	N	%
Sex		
Female	8	72,72%
Male	3	27,27%
Age Group (years old)		
60-79 years old	9	81,81%
80 or more	2	18,18%
School level		
Illiterate	0	0%
Up to 04 years	4	36,36%
4- 8\9 years	4	36,36%
9- 11 years	2	18,18%
Higher Education	1	9,09%

N = number of participants.

Tables 3 to 5 show the median and interquartile ranges of the data analyzed before and after the intervention, obtained by the non-parametric Wilcoxon test, for each of the instruments applied, respectively: Standardized Rivermead Behavioral Memory Test, Subjective Memory Complaints - MAC-Q and Pfeffer Questionnaire - QPAF.

Table 3. Standardized Rivermead Behavioral Memory Test Results Before and After Intervention.

RIVERMEAD			
Item	**Before**	**After**	**p**
	Md [IQR]	**Md [IQR]**	
1	**0 [0-1]**	**1 [0-2]**	**0.068**
2	**1 [0-1]**	**1 [0-1]**	**0.18**
3	**1 [0-1]**	**2 [1-2]**	**0.005**
4	**2 [0-2]**	**2 [2-2]**	**0.26**
5	**1 [0-2]**	**2 [1-2]**	**0.084**
6	**2 [0-2]**	**2 [2-2]**	**0.063**
7	**1 [0-2]**	**2 [1-2]**	**0.163**
8	**2 [0-2]**	**2 [1-2]**	**0.603**
9	**2 [0-2]**	**2 [2-2]**	**0.238**
10	**2 [1-2]**	**2 [2-2]**	**0.705**
11	**2 [2-2]**	**2 [2-2]**	**0.317**
12	**2 [2-2]**	**2 [2-2]**	**0.317**
Total score	**14 [10-20]**	**20 [17-21]**	**0.008**

Md = Median; IQR = interquartile ranges; p = p value.

In Table 3, it is emphasized that the cognitive performance assessed by the participants' level of mnemonic function improved with the intervention, considering the statistically significant result before and after the group. In the individual analysis by instrument items, it is noteworthy that item 3 - "Consultation" (measured by the task of remembering to ask a question when the alarm clock rings during the test) was statistically significant before and after intervention.

Table 4. Results of the Subjective Memory Complaints Questionnaire - MAC-Q before and after intervention.

MAC-Q			
Item	Before	After	p
	Md [IQR]	Md [IQR]	
1	4 [3-5]	3 [3-4]	0.063
2	4 [3-5]	3 [3-4]	0.063
3	4 [3-5]	3 [1-4]	0.048
4	4 [3-4]	4 [2-5]	0.565
5	3 [3-4]	3 [3-4]	0.157
6	10 [8-10]	6 [4-8]	0.024
Total score	27 [24-31]	24 [17-27]	0.013

Md = Median; IQR = interquartile ranges; p = p value.

Table 4 showed an improvement in the participants' subjective memory complaints, considering the statistically significant result before and after the group. In the individual analysis by instrument items, it is noteworthy that the improvement in items 3 - "remember where you placed objects" and 6 - "the participants' memory perception compared to their 40 years old" was statistically significant before and after intervention.

Table 5. Pfeffer Questionnaire Results - QPAF before and after intervention.

PFEFFER			
Item	Before	After	p
	Md [IQR]	Md [IQR]	
1	0 [0-0]	0 [0-0]	0.157
2	0 [0-1]	0 [0-1]	0.705
3	0 [0-1]	0 [0-0]	0.157
4	0 [0-0]	0 [0-0]	0.317
5	1 [0-1]	0 [0-1]	0.317
6	1 [0-1]	0 [0-1]	0.046
7	1 [0-1]	0 [0-1]	0.038
8	1 [0-1]	0 [0-0]	0.011
9	0 [0-1]	0 [0-0]	0.083
10	1 [0-1]	0 [0-0]	0.025
11	0 [0-0]	0 [0-0]	0.317
Total score	6 [4-7]	2 [0-3]	0.015

Md = Median; IQR = interquartile ranges; p = p value.

Table 5 highlights the participants' perception of their ability to perform IADL that involves cognitive skills more directly, considering the statistically significant result before and after the group. In the individual analysis by instrument items, it was observed that the differences were statistically significant for the following items before and after intervention: 6 - "Ability to pay attention, understand and discuss a radio, television or newspaper article", 7 – "Ability to remember family commitments and events", 8 – "Ability to take care of their own medicines" and 10 – "Ability to greet friends properly".

4 Discussion

This study aimed to describe and analyze together two group interventions performed by occupational therapists with elderly people with probable MND. The objective of the interventions was to offer the participants compensatory mnemonic strategies for coping with difficulties in IADL occupations, more directly related to cognitive skills, and social participation. Cognitive tasks and skills that are recognized by the literature may be altered in elderly people with MND (Farias et al., 2006; Schmitter-Edgecombe et al., 2012; Aretouli & Brandt, 2010; Exner et al., 2018; American Psychiatric Association, 2014). The tasks and cognitive skills related to social participation were: remembering faces and names, keeping track of events and surroundings, remembering commitments. The ones related to the instrumental activities of daily life were: keeping and finding objects; remembering to pay bills; planning a route, moving in the community ensuring leaving and returning home; remembering shopping items; properly planning, preparing and serving meals; paying attention and transmitting a message received; remembering to take the medicine prescribed.

The results showed that the intervention had positive effects because, based on the comparison between the scores before and after intervention of all instruments used, it was identified that there was an improvement in cognitive performance by the level of mnemonic function, reduction of subjective memory complaints and improved capacity in performing IADL that involve cognitive skills more directly.

After the intervention, when analyzing the total score of the Standardized RBMT instrument, there was an improvement in cognitive performance by assessing the level of mnemonic function. In the individual evaluation by items, the intervention also resulted in statistical improvement in item 3 - "Consultation", measured by the task of remembering to ask a specific question when the alarm rings after 15 minutes. This item is strongly related to some cognitive skills, such as attentional, executive function (planning) and memory skills, described in the literature as some that may be impaired in this population (American Psychiatric Association, 2014) and that were frequently addressed during the meetings.

The intervention also led to an improvement in subjective memory complaints, assessed by the total score of the MAC-Q instrument. The influence of the intervention was also positive in relation to the individual evaluation of each item, especially in items 3 - "Remembering where you placed objects" and 6 - "Perception of the participant's memory compared to their 40 years old". The third item is strongly related to attention and planning, which were specific themes dealt in the meetings and which, according to the literature, are important skills to be stimulated

in this population (American Psychiatric Association, 2014; Schmitter-Edgecombe et al., 2012). The last item suggests a more general perception of the improvement related to the subjective complaints presented by MAC-Q, which reiterates the improvement of the subjective perception of memory obtained by comparing the total score of this instrument before and after the intervention.

Observing the total score of the Pfeffer instrument, there was also an improvement in the ability to perform IADL that involves cognitive skills more directly. The change of score of this instrument suggests increased functional independence to perform the activities evaluated by the instrument. In the individual evaluation by items, the improvement noticed was, above all, in the items 6 - "Ability to pay attention, to understand and to discuss a radio program, television or a newspaper article"; 7 - "Ability to remember family commitments and events"; 8 – "Ability to take care of their own medicines" and 10 – "Ability to greet friends properly". These items articulate with different cognitive skills, such as attentional, executive function (organization and planning of ideas) and memory, reported throughout the meetings. Items 6 - "Ability to pay attention, understand and discuss a radio program, television or newspaper article" and 10 - "Ability to greet friends properly", also involve cognitive language skills, stimulating understanding, meeting words and naming.

We believe that the positive results of the intervention are related, among other aspects, to the fact that it emphasized activities that make up people's daily lives. Daily life is understood as a strategic and privileged scenario for occupational therapy intervention (Exner et al., 2018). We adopted compensatory strategies for difficulties in daily occupations and their respective cognitive abilities, more impaired in the elderly with MND, as elucidated by the literature (American Psychiatric Association, 2014; Schmitter-Edgecombe et al., 2012; Aretouli & Brandt, 2010; Farias et al., 2006). Thus, we recognize the possibility of mitigating the difficulties encountered in the daily lives of elderly with MND using compensatory strategies (Lu & Haase, 2011).

The benefits of the intervention may also be related to the diversity of strategies offered and shared throughout the meetings. For example, we sought to establish strategies for adapting the physical context, such as those related to planning, environmental organization and optimization of attention related to the environment (Radomski & Davis, 2005). The establishment of behavioral routines and habits (eg, use of specific checklists), as well as learning and using compensatory cognitive strategies such as association, categorization, mental image and external devices (Exner et al., 2018) were also addressed.). These strategies are used by occupational therapists to care elderlies with MND, as they favor the evocation of daily events and stimulate memory (Exner et al., 2018).

The results obtained in the intervention reaffirm these findings and indicate that the performance of IADL could have an impact, even indirectly, on cognitive skills. It is exemplified from item 7 - "Ability to remember family commitments and events" (assessed by Pfeffere, which measures the ability to perform IADL), which, besides being strongly related to the use of attention, executive function (organization and planning) and memory, articulates with item 3 - "Consultation" (assessed by the Rivermead instrument, which measures cognitive performance), which obtained statistically significant improvement. Such analysis is also related to

the one pointed out by Di Rienzo (2009), who states that daily activities mobilize and collaborate to stimulate the cognitive skills involved in its execution.

However, we understand that improving cognitive skills, reducing mnemonic complaints and improving functionality require a set of strategies to be offered to the elderly in order to sensitize them to the complexity involved in cognitive tasks and occupations that require more cognitive demand. Thus, when a compensatory strategy was more strongly emphasized in the group, depending on the occupation addressed, we tried to reinforce its use in other occupations, emphasizing them in subsequent meetings. We assume that the more compensatory strategies the elderlies adopt performing the activity, the greater the possibility of success, considering the multiplicity of aspects involved in the performance (Sato et al., 2014).

We consider that the fact of the elderlies being in a group and the effectiveness of shared strategies, contributed to the improvement of the subjective perception of memory evidenced by MAC-Q. Studies that investigated the effect of individual and group mnemonic training, observed that group training promoted positive effects on the performance of mnemonic tasks (Maria Netto et al., 2012). Moreover, a higher degree of satisfaction and optimism was also observed after cognitive stimulation interventions (Meneses et al., 2013; Rodríguez et al., 2012). In addition, negative stereotypes about aging can negatively affect cognitive performance (Metternich et al., 2009), as well as the emotional impact on cognition (Sato et al., 2014). It is believed that, although these aspects were not specifically evaluated in the intervention, the possibility of exchanging and sharing experiences in the group may have favored discussions and the elaboration of a less negative perception about cognitive deficit, increasing self-confidence, as well as the identification and use of strategies that reduce the difficulties resulting from memory impairment.

It is still necessary to point out that besides addressing daily occupations and compensatory strategies, the interventions tried to find ways of increasing the content addressed learning by the elderly. Thus, after each meeting, they received a leaflet with a summary of the guidelines provided, as well as tasks to perform during the following week, aiming at increasing the consolidation of the contents covered. Buschert et al. (2011), in dialogue with the literature that discusses their findings, highlight the relevance of sensitizing participants to behaviors that influence the difficulties in performing daily occupations, and to the possible benefits of applying learned mnemonic strategies to facilitate their performance. It is believed that the constant sharing and reflection on the cognitive complaints that affected the participants' daily life, as well as the home tasks that sought to reinforce the learned content and its daily application, contributed to the benefits identified in the results of this intervention. .

In addition, it is noteworthy that, at the beginning of each meeting, we retook the previous and the task performed at home, encouraging them to share feelings and difficulties involved in the topics discussed. The literature has pointed out that elderly with MND must be directly involved in the process of knowledge acquisition, since this population has the ability to learn new information and adapt their behavior preserved (Troyer et al., 2008; Frias, 2014).

We should consider some limitations in this study. One of them concerns the fact that the population is likely to be diagnosed with MND, that is, the elderly were not referred by medical staff, but were selected based on the score they got in the

instruments that suggest this condition. In addition, semi-structured questions asked for the elderly aimed to know their occupational universe, to raise their basic and instrumental activities of daily living and social participation, as well as cognitive complaints related to their performance. It is believed that the adopted criteria allow identifying elderly with probable MND, considering the criteria established by the Stockholm Symposium and the American Psychiatric Association (Winblad et al., 2004; American Psychiatric Association, 2014).

Another limitation was that the current study is quasi-experimental type of "before and after" conception. Thus, it was performed and analyzed an intervention with only one group of elderly people. We suggest further studies with a control group in order to increase the evidence of the results.

Despite these limitations, the originality and relevance of this work stands out. Research on cognitive interventions in Brazil is still incipient, especially regarding daily activities (Silva et al., 2011).

It is also worth mentioning the incentive to develop health actions that deal with cognitive stimulation and make it available to public users (Santos et al., 2012). In order to offer the elderlies with MND adequate attention and directed to their specificities, it is necessary to train professionals who have the potential to contribute to the health care of this population (Santos et al., 2012). In this sense, we highlight the great relevance of this article, which is believed to have the potential to instruct occupational therapists to act with MND, as the group intervention with this population described showed statistically significant results.

5 Conclusion

This article, which aimed to describe occupational therapy intervention with a group of elderly people with MND, observed a considerable improvement in cognitive performance by the level of mnemonic function, reduction of subjective memory complaints and IADL performance capacity that also involve cognitive ability.

Considering the benefits identified in this study, it is believed that the proposed intervention is a potent resource to be used by the occupational therapist that take care of elderlies with MND. It is believed that, in view of these benefits, the proposal may be expanded and offered to a greater number of elderlies, because, although larger groups make it difficult to monitor and adapt individualized activity, elderly with MND still have a variety of cognitive abilities preserved and greater independence to acquire and maintain knowledge (Troyer et al., 2008; Frias, 2014).

The intervention suggests the importance of occupational therapists who work with the elderly with MND, as this professional assists in health promotion and functionality, using their expertise to develop, maintain, improve and/or regain independence to perform daily occupations (Mello, 2007; American Occupational Therapy Association, 2015).

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Author's Contributions

Maria Carolina Almeida Alves - Lead author. She contributed in all stages of the work, in the manuscript writing and its critical revision. Maria Helena Morgani de Almeida - Professor responsible for coordinating the research project approved by the *Programa Institucional de Bolsas de Iniciação Científica*. Contributed in all stages of preparation and development of the final research report, in addition to the manuscript writing and its critical review. Camila Exner - She contributed to the conception and design of the research project, especially regarding the structuring and conduct of the group and data analysis and interpretation. Contributed to the manuscript writing and critical review. Rosé Colom Toldrá - She contributed especially in outlining the introduction and justification of the work and data discussion. She contributed to the article writing and critical review. Marina Picazzio Perez Batista - Co-responsible for coordinating the research project. She contributed at all stages of preparation and development of the final

research report and conducted the final review of the report. She contributed to all stages of manuscript writing and carried out the final revision. All authors approved the final version of the text.

Funding Source
This article is the result of a Scientific Initiation scholarship by the *Programa Institucional de Bolsas de Iniciação Científica* (PIBIC) in 2014/2015.

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