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COGNITIVE REHABILITATION IN PATIENTS WITH DEMENTIA OF THE ALZHEIMER TYPE AND ITS IMPACT ON ACTIVITIES OF DAILY LIVING

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Abstract

Aim: The aim of this pilot study is to demonstrate the possibility of using the resulting score of selected measurement tools to assess the impact of cognitive rehabilitation on carrying out ADL (activities of daily living) in patients with dementia of Alzheimer type.

Methods: We used qualitative methods – a case study. Empirical data on two female patients were obtained by the following methods: interview with the patients and their relatives, observation of the patient, analysis of medical records, selected measurement tools to assess ADL and IADL (instrumental activities of daily living).

Results: We presented two selected patients with mild stage of dementia of Alzheimer type and detected changes on the level of the ADL in patients during cognitive rehabilitation. For assessment of ADL we used the following tools: The Barthel Index of Activities of Daily Living (Barthel ADL) and The Lawton Instrumental Activities of Daily Living Scale (Lawton-Brody IADL). With repeated assessment of cognitive functions and the level of ADL performance (in patients before and after cognitive rehabilitation) by measurement tools, we did not determine changes in the comparison of input data.

Discussion: Subjective ADL assessment of patients also provides important information for the evaluator, even though for self-assessed instruments there may be a discrepancy between subjective and objective statements and clinical findings. Complete self-sufficiency in ADL was maintained as well as the same level of the dependence in IADL. Decrease of the cognitive abilities in patient with dementia of Alzheimer type has resulted in an increase of the dependence on the implementation of an instrumental ADL. Lawton-Brody IADL identified an increasing reliance on instrumental ADL in patients. It is not realistic to expect an improvement in cognitive functions in dementia of Alzheimer type and the ADL level considering the course and the prognosis of the disease. Success can be understood as maintaining at least the existing level of functions.

Conclusion: Stabilization of the ADL level in patients with dementia is an effect of complex therapy, not only of cognitive rehabilitation. The instruments used in case studies have limitations and they are appropriate screening tools in the assessment of ADL level.

Key words: *dementia; cognitive rehabilitation; activities of daily living; Barthel ADL; Lawton-Brody IADL*

ORIGINAL ARTICLE

INTRODUCTION

The dementia syndrome is characterized by multiple cognitive deficits that are associated with a reduction in the ability to perform daily self-care activities (Hegyi and Krajčík 2010). Proportionally to these cognitive deficits, the level of self-sufficiency is reduced (independence) in activities of daily living (ADL) and the dependence on others increases – in comprehensive at first, i.e. in so-called instrumental activities of daily living (IADL) and gradually in the primary, so-called basal activities of daily living (BADL) (Jirák 2009). In the first stage, the mild stage of dementia, the stereotypes of most ADL remain unchanged. Problems arise only selectively with regards to the subjective intensity of some of the activities, for example: dealing with financial issues, medication use, ability to handle money, ability to use bank cards. The patient is still capable of independent operation, but with more effort and complications. The patient gradually loses interest and spontaneity in the implementation of individual activities. In moderate stages of dementia, we see a decline in personal hygiene and the patient does not comply with good practices in implementation of ADL; housework is carried out with difficulty. Later on, the pation cannot even handle simple shopping, phone calls, handling of household appliances. In the third, severe stage of dementia, incontinence and immobility gradually arise; apathetic and hypobulic syndromes manifest with a reduced level of overall activity, and the ability to perform even simple ADL is fading away, until the patient becomes totally dependent on care (Geda et al. 2006, Kelley 2008, Robert et al. 2010). Table 1 shows some examples of changes in the implementation of ADL due to disorder of cognitive functions.

Table 1. Changes in ADL due to disorder of cognitive functions

Cognitive function	Examples of change
perception	non-recognition of objects and their improper use (e.g. the patient uses a toothbrush for brushing hair)
attention	reduced attention to carried out activities, not proceeding with any action, early termination of actions, paying attention to insignificant details
memory	not remembering the process of activities (for example cooking process), whether a certain action was taken, calling the same activity, inability to find the deferred items, not recognizing own environment, lack of orientation (e.g. problems with finding the bathroom), failure to keep individual information for so long that they could combine in a meaningful unit/one activity
thinking	inability to foresee consequences of a given activity, identify risk or problematic situation (e.g. switching off the cooker, handling electrical appliances), action steps are not connected to each other in a logical order, inability to decide
visual-spatial orientation	cannot estimate the distance when handling objects or in a room, inability to find a hole on the sleeve/trousers
executive functions	inability to plan daily activities, inability to start and to stop an activity, adapt activities to environmental conditions
praxis	the patient doesn't know what to do with the devices (e.g. with toothpaste), tools are used improperly (e.g. squeeze toothpaste on face), failing to grab objects (e.g. grabs kitchen knife by the blade)

Source: Faktorová 2003, Kalvach et al. 2004, Holmerová et al. 2005, Preiss, Kučerová et al. 2006

Caring for a patient with dementia with an increasing deficit in cognition, and thus deficit in the ADL, requires an entire and multidisciplinary approach. An important part in care management is the non-pharmacological approach, which includes cognitive rehabilitation (Holmerová et al. 2005, Blazer and Steffens 2009). It is also characterized as a supplemental therapy to pharmacotherapy (Sitzer et al. 2006). The clinical guidelines recommend cognitive rehabilitation as therapeutic intervention for patients with dementia, e.g. European Federation of Neurological Society (Hort et al. 2010), National Collaborating Centre for Mental Health, National Institute for Health and Clinical Excellence (The NICE-SCIE guideline 2007), Czech Neurological Society (Sheardová et al. 2009), Hartford Institute for Geriatric Nursing (Fletcher 2008).

Cognitive rehabilitation represents a therapeutic approach, which includes interventions intended to activate the patient (as well as the family members) based on the individual requirements and needs in order to compensate for the cognitive deficit (Manzine and Pavarini 2009, Gardette et al. 2010). The approach is characterized as "damaged cognitive functions repair" (Klucká and Volfová 2009) or "restoration or maintaining an existing level of cognitive functions and strengthening those that remain" (Janečková et al. 2004, Kalvach et al. 2004, Wilson 2009). The given approach has a theoretic-methodological framework based on an individual patient requirements (Sheardová et al. 2007, Wilson 2009). Some of the literature, e.g. Faucounau et al. (2010), Gardette et al. (2010) use and define the term "cognitive rehabilitation" inconsistently. Cognitive rehabilitation is indicated in patients with a damaged cognitive function within the mild stage of dementia and also mild cognitive impairment (MCI) (Jirák 2009). The time period of cognitive rehabilitation is not uniformly defined and varies, and may amount to e.g. 5 weeks (Zanetti et al. 2011), 12 months (Requena et al. 2004) or even 34 months (Fernández et al. 2006).

In addition to the described effects of this approach – slowing down the regression in cognition and supporting of residual cognitive functions, the stabilization of the level of ADL performance in the longest time period (Willis et al. 2006, Gardette et al. (2010). Bottino et al. (2005), Rozziny et al. (2007), Fang et al. (2009) and Olazarán et al. (2010)) emphasizes the stabilization of cognitive and functional performance in patients with mild stage of dementia of Alzheimer type due to cognitive rehabilitation in combination with pharmacotherapy of dementia. There are also studies which clearly do not confirm an impact of the cognitive rehabilitation on the functional area (De Vreese et al. (2001), Gates et al. (2011). Sitzer et al. (2006)). In general, based on a meta-analysis of literary resources summarizing an effect of the cognitive rehabilitation in patients with dementia of Alzheimer type in the field of functional domains, the study of ADL has the following limitations: reviewed studies frequently reported small sample sizes; absence of controlled studies, a few studies used performance-based measures of the ADL; most studies combined multiple therapeutic strategies, making it difficult to evaluate the efficacy of individual strategies.

For screening purposes, diagnosis and monitoring changes during therapy in an implementation of ADL in patients with dementia are considered as appropriate and the following measurement tools are often recommended: Barthel ADL and Lawton-Brody IADL (Cummings et al. 2002, Janečková et al. 2004, Fanfrdlová 2006, Preiss, Kučerová et al. 2006, Johnson, Odenheimer et al. 2011). These tools have been repeatedly used in studies examining the relationship between cognitive deficits in dementia and a deficit of self-sufficiency in ADL (Willis et al. 2006, Rozzini et al. 2007, Talassi et al. 2007, Wilms et al. 2007). None of these tools were specifically developed for the target group of seniors with an organic brain damage, although Lawton-Brody IADL also considers ADL which require complex cognitive processing (e.g. phone calls, taking medications, managing finances). Characteristics of measuring tools are presented in Table 2.

Table 2. Characteristics of selected instruments

characteristics	**Barthel ADL** (The Barthel Index of Activities of Daily Living)	**Lawton-Brody IADL** (The Lawton Instrumental Activities of Daily Living Scale)
authors	Mahoney Florence I., Barthel Dorothea W.	Brody Elaine M., Lawton Powel M.
target group/ patients	– originally developed for patients with neuromuscular and musculoskeletal diseases with long-term hospitalization – hospitalized patients (not necessarily seniors) with chronic diseases and an indication of long-term rehabilitation care – seniors in general	– seniors living in community – seniors in general – long-term hospitalized patients
items	10 ADL: eating/drinking, moving to/from bed/chair/ wheelchair, personal hygiene, toilet use, bathing, walking on a surface, walking the stairs, dressing up, bladder continence, bowel continence	8 instrumental ADL: making phone calls, shopping, food preparation/cooking, housework/guidance/ housekeeping, laundry/work around the house, transportation/use of vehicles, taking medications, finance/money handling
final score/points	0–40 high dependence 45–60 medium dependence over 60 lighter dependence over 100 independence	0–8 (simple scoring) "cut-of-points" 5
psychometric characteristics	reliability variance 0.87–0.93 good predictive validity	reliability 0.85 significant validity
preference	testing the physical disability of both rough and fine motor skills, personal care and mobility; assesses an individual's ability to exist independently, be self-sufficient in ADL; regular and repeated use allows to assess improvement of one's condition after treatment/intervention	detects the ability to exist independently in one's own home without the assistance of another person – assessing more complex activities requiring the use of rough and fine motor skills, but also cognitive processes (e.g. phone calls, medication, finances); captures changes during long-term care (even in patients with cognitive deficits – with dementia)
limitations	focuses only on the area of physical mobility, poor detection of the boundaries between light and medium dependence	unsuitable for institutionalized patients/ residents of nursing homes

Source: Mahoney and Barthel 1965, Lawton and Brody 1969, McDowell 2006, Graf 2008, IGEC 2011, Patient-Reported Outcome (PRO) and Quality of Life (QoL) Instruments Database 2011

MATERIAL AND METHODS

The aim of this pilot study is to present two selected cases (from the group of patients enrolled in cognitive rehabilitation) – female patients with mild stage of dementia of the Alzheimer type, and to demonstrate the possibility of using the resulting score of selected measurement tools to assess the impact of cognitive rehabilitation on the level of the self-care of the ADL in patients with dementia. Empirical data on patients and relatives were obtained by the following methods:

1. interview with the patient and his/ her relatives (e.g. areas of interest, expectations of cognitive rehabilitation, ability of understanding issues and instructions, family relationship);
2. observation of the patient (e.g. mood, psychomotor pace, non-verbal communication, behaviour);
3. analysis of medical records (anamnesis data, diagnostic and therapeutic procedures);
4. selected measurement tools to assess ADL, IADL.

The selection of patients was intentional and was based on the following criteria: age of 60 or above, mild stage of dementia diagnosed according to internationally valid criteria, agreement of a psychiatrist for this approach, pharmacotherapy of dementia for over 3 months before beginning cognitive rehabilitation, written informed consent of patients participating in cognitive rehabilitation, willingness and ability to work, absence of disturbances of consciousness, maintained/offset sight, hearing and fine motor skills, retained the ability to understand indication of the psychiatrist or the neurologist for cognitive rehabilitation and to answer. Basic patient data are presented in Table 3.

Table 3. Patients – basic data

patient	A	B
age	68 years	60 years
gender	woman	woman
status	married	married
education	elementary	secondary
lives in household	with husband	with husband
medical diagnosis	dementia of the Alzheimer type	dementia of the Alzheimer type
development of dementia	approximately 2 years	2 to 3 years
pharmacotherapy of dementia	acetylcholinesterase inhibitor with an active substance donezepil (more than three months before beginning cognitive rehabilitation)	acetylcholinesterase inhibitor with an active substance donezepil (more than three months before beginning cognitive rehabilitation)
Barthel ADL assessed by patient herself input*/output**	110*/110** points	110*/110** points
Barthel ADL assessed by family member input*/output**	110*/110** points	110*/110** points
IADL patient's assessment input*/output**	4*/4** points	5*/5** points
IADL family member's assessment input*/output**	2*/2 ** points	5*/5 ** points

The methodology of cognitive rehabilitation

We have gained the competence to implement the cognitive rehabilitation by passing the training courses in the Centre of Memory in Bratislava. Cognitive rehabilitation was realized at the daily out-patient unit of Clinic of Psychiatry, Jessenius Faculty of Medicine in Martin and University Hospital Martin. It took place once a week in the morning, with a duration of 90 minutes during a period of 2 years.

Individual activities focused on the sensory perception area, orientation, attention, memory, motivation, executive functions, complex mental operations (spatial-structural thinking and associative thinking, solving logical tasks, abstraction, imagination, creativity), regulation of social behaviour, and stimulation of physical activity (sensory motor skills and coordination) (examples of activities are presented in Table 4). The structure of cognitive rehabilitation was: introduction and supporting of interpersonal communication, training of concentration, realization of cognitive tasks, supporting of self-reflection in patients and conclusion.

Table 4. Illustration of activities within cognitive rehabilitation

Cognitive function	Examples of activities
long-term memory	complete the missing words in folk songs, complete proverbs and sayings, names of famous movies, form a simile
episodic memory	remember the experiences of previous days, childhood games
semantic memory	appoint items from one category, create synonyms, antonyms
short-term memory	appoint, draw or write letters or other characters, describe a picture after certain exposure
verbal fluency	talk in the group on selected topics
complex mental operations	logical tasks – add a word to a sentence so that it makes sense, identify the correctness of a statement, explain proverbs and sayings; compose words from letters, anagrams creativity – to shape a story, to finish off a drawing with one's own imagination
ideomotor skills	imagination and a description of a process (e.g. preparing lunch); describe a journey from point A to point B
graphomotorics	redraw geometric shapes
visual-spatial coordination	interpret images, patterns, describe episodic scenes by focusing on the visual aspect, finish off a tangram, find a path out of the maze
concentration of attention	search for specific letters, numbers in the text or the same numbers in the group

Source: Suchá 2007, Klucká and Wolfová 2009, Štěpánková and Steinová 2009

RESULTS

Case study A

68-year old female patient in healthy condition has approximately 2-year old progress of cognitive disorder. She began to notice that she forgets more, even her husband started to warn her that she often forgets to take medication, buy planned/ agreed upon food, forget things during the cooking process – e.g. to turn off the stove, fail to choose a suitable washing program on the washing machine. Gradually, she became unable to independently carry out any housework; she even stopped shopping, because she could not get into the shop (she got lost). In the area of interests, she gave priority to walks where she needed someone to accompany her (a relative). Based on an examination of the clinical condition by a psychiatrist, psychologist and the diagnostic tests results, mild stage of dementia of Alzheimer type has been diagnosed. Acetylcholinesterase inhibitor with the active substance donezepil was prescribed. Psychiatrist indicated cognitive rehabilitation, with which she agreed (signed informed consent). The patient had no expectations from the cognitive rehabilitation; she rather had concerns whether she would handle it. Before the cognitive rehabilitation, self-sufficiency in ADL was assessed through Barthel ADL and Lawton-Brody IADL, which were administered as self-reviewed instruments within the interview with the patient (patient has verbally expressed responses concerning the assessment items) (Barthel 110 points, Lawton-Brody IADL 4 points). In the instrumental ADL, we have identified an increasing dependence in shopping for items, food preparation, doing the laundry, use of medication. Before the cognitive rehabilitation, we asked a family member for an objective assessment of self-care in ADL through Barthel ADL (110 points) and through Lawton-Brody IADL (2 points) – the response was that there was an increasing dependence for shopping, preparing meals, laundry, housework, preparing and taking medication and handling with money. According to Barthel, the patient's ADL was standard and she is completely self-sufficient.

For the first three sessions of cognitive rehabilitation, she came accompanied by a relative, gradually on her own, suitably

groomed. She was bringing along fluid for individual rehabilitation sessions, but she drank it after our warning. She justified her absence on several cognitive rehabilitation units due to health problems, for example an ambulance was repeatedly called to her due to dehydration followed by collapse (at a reduced sense of thirst, she kept forgetting to continuously drink despite the fact that she had fluids ready on a visible place). Patient's relative sometimes told as about the patient's lack of interest in housework. The patient's condition demonstrated a decline of cognitive functions. Despite the fact that the patient had a cognitive deficit, she demonstrated compliance during cognitive rehabilitation.

In the conclusion of cognitive rehabilitation, we again have considered the level of ADL (subjective assessment of patient) (Barthel ADL 110 points, Lawton-Brody IADL 4 points, no changes) (Table 3) and likewise there was no change in the objective assessment of the relative. At the IADL administration she was pleased that she doesn't need assistance when travelling to the cognitive rehabilitation by bus (she feels more confident than in the previous period), unlike at the beginning. The patient continually expressed satisfaction with the cognitive rehabilitation mainly because she felt good in the group and she enjoyed individual activities.

Case study B

60-year old female patient in a psychiatric clinic dispensed for memory failure after polytrauma with concussion (in 2007) and an organic affective depressive disorder. Approximately 3 years ago, she began observing a memory failure (e.g. she could not find stored personal items); when resolving crosswords she could not remember the words she knew before. She was losing an interest in reading books; she did not understand the story, because she forgot its chronology. She avoided talking to people, because she could not remember the right words and the topic of the conversation. She also had problems with ADL – when shopping she could not remember what she needed to buy, she was making mistakes in food preparation, her husband was gradually taking over the household duties, she was forgetting to take her medications. Following an examination of the clinical condition by a psychiatrist, psychologist and the diagnostic tests results (computer tomography brain scan found atrophic changes indicating the presence of the Alzheimer disease), a mild stage of dementia of Alzheimer type has been diagnosed. Acetylcholinesterase inhibitor with the active substance donezepil was prescribed. Psychiatrist indicated cognitive rehabilitation, which she has agreed to (she has signed an informed consent). She was expecting a memory improvement, so she could be more independent in housework.

Before the cognitive rehabilitation, the self-sufficiency in ADL was assessed through Barthel ADL and Lawton-Brody IADL, which were administered as self-assessment instruments. According to Barthel, the patient was completely independent, and she also scored in the upper limits of normal in IADL, with an identified increasing dependence for shopping, preparing meals, and taking medication. Before the cognitive rehabilitation, we asked a family member about an objective assessment of the self-sufficiency in ADL through Barthel ADL (110 points) and through Lawton-Brody IADL (5 points) (Table 3) – an increasing dependence for shopping, preparing meals, preparing and taking medication.

She came on her own to each cognitive rehabilitation meeting, with adequately groomed appearance dressed. However, she repeatedly came late. She explained the delay by saying that she forgot to check the time at home. She demonstrated compliance during cognitive rehabilitation.

She felt better; went to the garden and to the shop on her own by bus. She felt more confident in the presence of her husband during shopping and bought according to a list. She planned housework, but didn't follow this plan since she had no impulse to begin working. Her husband placed her pills in a medication box and he reminded her to take them. She prioritized spending leisure time passively (e.g. watching television, sitting and watching her surroundings).

In the conclusion of cognitive rehabilitation, we have repeatedly considered the ADL (subjective assessment of patient) (Barthel ADL 110 points, Lawton-Brody IADL 5 points, no change) and there was no change in the objective assessment of the family member either. The patient felt well, she rated her mood as good, she continually

expressed satisfaction with the cognitive rehabilitation mainly because she met people who understood her memory problems.

DISCUSSION

The ability to carry out ADL (and related cognitive functions) and limitations thereof generally represent a central psychological, medical and social theme for seniors. The psychological point of view takes into account a decrease of autonomy, independence, sense of life as one of the diagnostic criteria of mental state (Halama et al. 2010). Medically accepted is covariance between diseases associated with age (e.g. dementia) on one hand and the decrease of independence and functioning on the other. Assessment of ADL limitations is one of the diagnostic criteria recommended by the clinical guidelines. In social terms, limitations indicate the need for appropriate institutionalized care for patients with dementia and systematic planning of financial resources for these facilities (Wilms et al. 2007). The presented female patients with dementia of Alzheimer type belong to the age group of seniors, they live at home with relatives and they have partially reduced ADL capacities. Neither of the patients have neuromuscular or musculoskeletal diseases which would cause an increasing dependence in ADL. At the admission assessment before the cognitive rehabilitation, both of the patients were ADL-assessed and the final score in the Barthel ADL in both cases indicates full independence. In mild stages of dementia, there is no sensitive tool for detecting changes in self-sufficiency (Bucks et al. 1995). These significant changes occur mostly in moderate and severe stages of dementia (Pérès et al. 2008). The Lawton-Brody IADL tool identified an increasing reliance on instrumental ADL in patients. Decrease of their cognitive abilities has resulted in increasing the dependence on the implementation of an instrumental ADL (Willis et al. 2006). Patients considering the maintained criticality have administered tools as self-assessment, and that is the reason why the results could be influenced by their subjectivity. Subjective ADL assessment also provides important information for the evaluator, even though there may be discrepancies between subjective and objective statements and clinical findings.

With repeated assessment of cognitive functions and the level of ADL performance (in patient and relative before cognitive rehabilitation and in its conclusion) we did not determine changes in the comparison of input data (Table 3). Complete self-sufficiency in ADL was retained, and the same goes for the level of dependence in IADL. It is not realistic to expect an improvement in cognitive functions in dementia of Alzheimer type and the ADL level considering the course and the prognosis of the disease. Success can be understood as maintaining at least the existing level of functions (Acevado and Loewenstein 2007). Deceleration of the stabilization progression in working condition is also described in the case study of Quittre et al. (2005) and Fernández et al. (2006). Achievement of improvements in ADL and also in cognitive functions due to cognitive rehabilitation is described to be common in seniors with the physiological changes in cognition or in elderly patients with Mild cognitive impairment (MCI), as stated by the author Willis et al. (2006) based on a 5-year randomized controlled study with a sample of 2,852 respondents with an average age of 73.6 years. We cannot attribute the stabilization of the ADL capacities of our patients only to the realized cognitive rehabilitation, since this is the result of the comprehensive treatment of dementia.

In our study we found differences between the results of the selected measurement tools and the current health condition of the patient (decline of cognitive functions and self-care in patient from case study A). We used measurement tools that have certain limitations and are not sensitive enough to capture all of the changes in health conditions. Another limiting factor can be the age of the patients (early period of old age), since the sensitivity of IADL increases in the age group of 75 years and older (sensitivity 93%) (Juva et al. 1997). Moreover, the instrument does not capture the subjective feeling of confidence when travelling by bus (patient A) or a reduced ability to begin an activity (aspect of volition) due to disturbed executive functions (patient B). The priorities of the tools lie in their short and simple administration and a

strong focus on orientation in the issues of ADL (Graf 2008).

CONCLUSION

Cognitive rehabilitation is considered as one of the non-pharmacological methods of stabilizing the ADL level in patients with dementia, where there is a tendency of progressive development of an increasing dependence on another person. Assessing the ADL level through the measuring instruments is generally considered as efficient and it is referred to as a predictor of morbidity and a risk factor for institutionalization of patients with dementia. Given that these measurement tools are generic, they are not capable of capturing specific changes in ADL in the mild stage of dementia. Therefore, the presented pilot case indicates that their usefulness for monitoring the cognitive rehabilitation effect is not high, and that they rather serve as screening tools to assess the general level of ADL capabilities. If we want to get relevant results, specific tools that are developed specifically for assessing ADL in patients with dementia should be used in clinical practice, for example: Bristol Activities of Daily Living Scale (Bucks et al. 1995), Functional Assessment Questionnaire (Pfeffer et al. 1982), and Disability Assessment for Dementia (Gélinas et al. 1999). In order for these to become commonly used in research and in practice, these should be tested for reliability and validity in the Slovak population.

One limitation of our pilot study is the low number of patients, and that is why we couldn't deduce a general conclusion about the patient's self-care during cognitive rehabilitation.

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REFERENCES

1. Acevado A, Loewenstein DA (2007). Nonpharmacological Cognitive Interventions in Aging and Dementia. J Geriat Psych Neur. 20/4: 239–249. ISSN 0891-9887.
2. Blazer DG, Steffens DC (2009). The American Psychiatric Publishing Textbook of Geriatric Psychiatry. 4th ed. Arlington: American Psychiatric Publishing. p. 676. ISBN 9781585622771.
3. Bottino CMC, Carvalho IA, Alvarez AM, Avila R, Zukauskas PR, Bustamante SE, Andrade FC, Hototian SR, Saffi F, Câmargo CH (2005). Cognitive rehabilitation combined with drug treatment in Alzheimer's disease patients: a pilot study. Clin Rehabil. 19/8: 861–869. ISSN 1477-0873.
4. Bucks RS, Ashworth DL, Wilcock GK, Siegfried K (1995). Assessment of activities of Daily Living in Dementia: Development of the Bristol Activities of Daily Living Scale. Age Ageing. 25: 113–120. ISSN 1468- 2834.
5. Cummings JL, Frank JC, Cherry D, Kohatsu ND, Kemp B, Hewett L, Mittman B (2002). Guidelines for managing Alzheimer's disease: Part I. Assessment. Am Fam Physician. 65/ 11: 2263–2272. ISSN 0002-838X.
6. De Vreese L, Neri M, Fioravanti M, Belloi L, Zanetti O (2001). Memory rehabilitation in Alzheimer's disease: a review of progress. Int J Geriatr Psychiatry. 16/8: 794–809. ISSN 1099-1166.
7. Faktorová M (2003). Vyšetrení ergoterapeutem a terapie kognitivních a percepčních poruch pacientů po poškození mozgu [Examination by occupational therapist and therapy of cognitive and perceptional disorders in patients after brain damage]. In: Havrdová E (eds.). Neurologie [Neurology]. Praha: Triton, p. 353–577 (Czech).

8. Fanfrdlová Z (2006). Průběh a charakter kognitivního deficitu [Development and characterization of cognitive deficit]. In: Preiss M, Kučerová H et al. Neuropsychologie v neurologii [Neuropsychology in neurology]. Praha: Grada Publishing, p. 141–143. ISBN 80-247-0843-4 (Czech).
9. Fang Y, Rose KM, Burgener SC, Cunningham C, Buettner LL, Beattie E, Bossen AL, Buckwalter KC, Fick DM, Fitzsimmons S, Kolanowski A, Janet K et al. (2009). Cognitive training for Early – Stage Alzheimer's Disease and Dementia. J Gerontol Nurs. 35/3: 23–29. ISSN 1938-243X.
10. Faucounau V, Wu YH, Boulay M, De Rotrou J, Rigau AS (2010). Cognitive intervention programmes on patients affected by Mild Cognitive Impairment: A promising intervention tool for MCI. J Nutr Health Aging. 14/1: 31–35. ISSN 1760-4788.
11. Fernández AL, Manoiloff JM, Monti AA (2006). Long-term Cognitive treatment of Alzheimer's Disease: a single case study. Neuropsychol Rehabil. 16/1: 96–109. ISSN 1464-0694.
12. Fletcher K (2008). Nursing Standard of Practice Protocol: Recognition and Management of Dementia. Hartford Institute for Geriatric Nursing. [online] [cit 2011-06-17]. Available at: http://www.Consultgerirn.org/topics/dementia/want_to_know_more
13. Gardette V, Coley N, Andrieu S (2010). Non-pharmacologic Therapies: A Different Approach to AD. The Canadian review of Alzheimer's disease and other Dementias. [online] [cit. 2011-08-20]. Available at: http://www.stacommunications.com/Back-issue_pages/AD_Review/adPDFs/2010/October2010/13.pdf
14. Gates NJ, Sachdev PS, Fiatarone Singh MA, Valenzuela M (2011). Cognitive and memory training in adults at risk of dementia. A Systematic Review. BMC Geriatrics. 11/55: 1–14. ISSN 1471-2318.
15. Geda YA, Negash S, Petersen RC (2006). Memory disorders. In: Agronin ME, Maletta GJ (eds.). Principles and Practice of Geriatric Psychiatry. 1st ed. Philadelphia: Lippincott Williams & Wilkins, p. 295. ISBN 9780781748100.
16. Gélinas I, Gauthier L, McIntyre M, Gauthier S (1999). Development of a functional measure for persons with Alzheimer's disease. The disability assessment for dementia. Am J Occup Ther. 53: 471–481. ISSN 1943-7676.
17. Graf C (2008). How to Try This: The Lawton Instrumental Activities of Daily Living Scale. Am J Nurs. 108/4: 62–63. ISSN 1538-7488.
18. Halama P, Ondrejka I, Žiaková K, Farský I (2010). Existenciálne a spirituálne koreláty mentálneho zdravia u bežnej populácie a psychiatrických pacientov [Existential and spiritual correlates of mental health in normal population and psychiatric patients]. Československá psychologie. 54/1: 42–57. ISSN 0009-062X (Slovak).
19. Hegyi L, Krajčík Š (2010). Geriatria [Geriatrics]. 1st ed. Bratislava: Herba, p. 464. ISBN 9788089171736 (Slovak).
20. Holmerová I, Janečková H, Vaňková H, Veleta P (2005). Nefarmakologické přístupy v terapii Alzheimerovy demence a praktické aspekty péče o postižené [Non-pharmacological methods in the management of dementia and practical aspects of care]. Psychiatria pre prax. 6/4: 175–178. ISSN 1335-9584 (Czech).
21. Hort J, O'Brien JT, Gainotti G, Pirttila T, Popescu BO, Rektorova I, Sorbi S, Scheltens P (2010). EFNS guidelines for diagnosis and management of Alzheimer's diseases. Eur J Neurol. [online] no. 10 [cit. 2011-09-15]. Available at: http://www.efns.org/fileadmin/user_upload/guidline_papers/EFNS_guideline_2010_diagnosis_and_management_of_AD.pdf
22. Iowa Geriatric Education Center – IGEC (2011). Geriatric Assessment Tools. [online] [cit. 2011-06-17]. Available at: http://www.healthcare.uiowa.edu/igec/tools/Default.asp
23. Janečková H, Kalvach Z, Holmerová I (2004). Akceptace člověka s demencí [Acceptation of patient with dementia]. In: Kalvach Z, Zadák Z, Jirák R, Sucharda P, Zavázalová H (eds.). Geriatria a gerontológia [Geriatrics and Gerontology]. Praha: Grada Publishing, p. 445. ISBN 80-247-0548-6 (Slovak).
24. Jirák R (2009). Základní klinické příznaky demencí [Essential clinical signs of dementias]. In: Jirák R, Holmerová I, Borzová C a kol. Demence a jiné poruchy pamäti [Dementias and another memory disorders]. Praha: Grada Publishing, p. 22. ISBN 978-80-247-2454-6 (Czech).
25. Johnson JC, Odenheimer G et al. (2011). Dementia Performance Measurement Set – American Medical Association. [online] [cit. 2011-09-19]. Available at: http://www.ama-assn.org/resources/doc/cqi/dementia-measurement-set.pdf
26. Juva K, Mäkelä M, Erkinjuntti T, Sulkava R, Ylikoski R, Valvanne J, Tilvis R (1997). Functional assessment scales in detecting dementia. Age Ageing. 26/5: 393–400. ISSN 1468- 2834.

27. Kalvach J et al. (2004). Geriatrie a gerontologie [Geriatrics and gerontology]. 1st ed. Praha: Grada Publishing, p. 861. ISBN 80-247-0548-6 (Czech).
28. Kelley RA (2008). Cognitive Disorders: Delirium, Dementia and Amnestic Disorders. In: Fortinash KM, Worret PAH (eds.). Psychiatric Mental Health Nursing. St. Louis: Mosby Elsevier, p. 350.
29. Klucká J, Volfová P (2009). Kognitivní trénink v praxi [Cognitive training in practice]. Praha: Grada Publishng, p. 160. ISBN 8024726084 (Czech).
30. Lawton MP, Brody EM (1969). Assessment of Older People: Self-Maintaining and Instrumental Activities of Daily Living. Gerontologist. 9/3: 179–186. ISSN 1758-5341.
31. Mahoney FI, Barthel DW (1965). Functional evaluation: The Barthel Index. Maryland State Med J. 14: 61–65. ISSN 0025-4363.
32. Manzine PG, Pavarini SC (2009). Cognitive rehabilitation: Literature review based on levels of evidence. Dement Neuropsychol. 3/3: 248–255. ISSN 1980-5764.
33. McDowell I (2006). Measuring Health. A Guide to Rating Scales and Questionnaires. 3rd ed. New York: Oxford University Press, p. 748. ISBN-13: 978-0195165678.
34. Olazarán J, Reisberg B, Clare L, Cruz I, Peña-Casanova J, del Ser T, Woods B, Beck C, Auer S, Lai C, Spector A, Fazio S et al. (2010). Nonpharmacological Therapies in Alzheimer's Disease. A Systematic Review of Efficacy. Dement Geriatr Cogn. 30/2: 161–178. ISSN 1664-5464.
35. Patient-Reported Outcome (PRO) and Quality of Life (QoL) Instruments Database (2011). [online] [cit. 2012-01-17]. Available at: http://www.proqolid.org/proqolid/search__1/author_s_name?ltr=L
36. Pérès K, Helmer C, Amieva H, Orgogozo JM, Rouch I, Dartigues JF, Barberger-Gateau P (2008). Natural history of decline in instrumental activities of daily living performance over the 10 years preceding the clinical diagnosis of dementia: A prospective population-based study. J Am Geriatr Soc. 56/1: 37–44. ISSN 1532-5415.
37. Pfeffer RI, Kurosaki TT, Harrah CH, Jr., Chance JM, Filos S (1982). Measurement of functional activities of older adults in the community. J Gerontol. 37/3: 323–329. ISSN 1758-535X.
38. Preiss M, Kučerová H et al. (2006). Neuropsychologie v psychiatrii [Neuropsychology in psychiatry]. 1st ed. Praha: Grada Publishing, p. 411. ISBN 8024714604, 9788024714608 (Czech).
39. Quittre A, Olivier C, Salmon E (2005). Compensating strategies for impaired episodic memory and time orientation in a patient with Alzheimer's disease. Acta Neurol Belg. 105/1: 30–38. ISSN 2240-2993.
40. Requena C, López Ibor MI, Maestú F, Campo P, López Ibor JJ, Ortiz T (2004). Effects of cholinergic drugs and cognitive training on dementia. Dement Geriatr Cogn Disord. 18/1: 50–54. ISSN 1421-9824.
41. Robert P, Ferris S, Gauthier S, Ihl R, Winblad B, Tennigkeit F (2010). Review of Alzheimer's disease scales: is there a need for a new multi-domain scale for therapy evaluation in medical practice? Alzheimer's Res Ther [online]. no. 24 [cit. 2011-06-17]. Available at: http://alzres.com/content/2/4/24
42. Rozzini L, Costardi D, Chilovi BV, Franzoni S, Trabucchi M, Padovani A (2007). Efficacy of cognitive rehabilitation in patients with mild cognitive impairment treated with cholinesterase inhibitors. Int J Geriatr Psychiatry. 22/4: 356–360. ISSN 1099-1166.
43. Sheardová K, Hort J, Rusina R, Bartoš A, Línek V, Ressner P, Rektorová I (2007). Doporučené postupy pro léčbu Alzheimerovy nemoci a dalších onemocnění spojených s demencí [Recommendations for the diagnosis and management of Alzheimer's disease and other disorders associated with dementia]. Cesk Slov Neurol. 70/5: 589–594. ISSN 1802-4041 (Czech).
44. Sheardová K et al. (2009). Doporučené postupy pro terapii Alzheimerovy nemoci a ostatních demencí. [Treatment guidelines for Alzheimer's disease and other dementias]. Psychiatria pre prax. 10/5: 224–227 (Czech).
45. Sitzer DI, Twamley EW, Jeste DV (2006). Cognitive training in Alzheimer's disease: a meta-analysis of the literature. Acta Psychiatr Scand. 114/2: 75–90. ISSN 1600-0447.
46. Štěpánková H, Steinová D (2009). Trénování paměti [Memory training]. 1st ed. Praha: Psychiatrické centrum Praha, p. 95. ISBN 9788087142080 (Czech).
47. Suchá, J (2007). Cvičení paměti pro každý věk [Memory's practice for all age]. 1st ed. Praha: Portál, p. 175. ISBN 978-80-7367-199-0 (Czech).
48. Talassi E, Guerreschi M, Feriani M, Fedi V, Bianchetti A, Trabucchi M (2007). Effectiveness of a cognitive rehabilitation program in mild dementia (MD) and mild cognitive impairment. MCI: Case control study. Arch Gerontol Geriatr. 44/Suppl 1: 391–399. ISSN 1872-6976.

49. The NICE-SCIE Guideline on Supporting People with Dementia and their Carers in Health and Social Care: Dementia (2007). [online] London: The British Psychological Society, p. 391. [cit. 2012-09-21]. Available at: http://www.nice.org.uk/nicemedia/pdf/CG42Dementiafinal.pdf
50. Willis SL, Tennstedt SL, Marsiske M, Ball K, Elias J, Mann Koepke K, Morris JN, Rebok GW, Unverzagt FW, Stoddard AM, Wright E (2006). Long-term Effects of Cognitive Training on Every day Functional Outcomes in Older Adults. JAMA. 296/23: 2805–2814. ISSN 1538-3598.
51. Wilms HU, Riedel-Heller SG, Angermeyer MC (2007). Limitations in activities of daily living and instrumental activities of daily living capacity in a representative sample: disentangling dementia-and mobility-related effects. Compr Psychiatry. 48/1: 95–101. ISSN 1532-8384.
52. Wilson BA (2009). Memory rehabilitation: Integrating theory and practice. 1st ed. New York: The Guilford Press, p. 284. ISBN 9781606233832.
53. Zanetti O, Zanieri G, Di Giovanni G, De Vreese LP, Pezzini A, Metitieri T, Trabucchi M (2011). Effectiveness of procedural memory stimulation in mild Alzheimer's disease patients: a controlled study. Neuropsychol Rehabil. 11/3-4: 263–272. ISSN 1464-0694.

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