



Non-pharmacological therapies and cognitive function in dementia¹

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Abstract: The article deals with the issue of showing the relationship between non-pharmacological therapeutic methods and the level of functioning of cognitive processes in people with dementia. The purpose of the study was to determine whether there is a relationship between non-pharmacological therapeutic methods and the level of functioning of cognitive processes in people with dementia, and if there is such a relationship, whether the cognitive processes of those participating in the therapy are at a higher level, and whether the level of functioning of cognitive processes has an impact on the independence of the subjects of the study. There were 60 people diagnosed with dementia included in the study, and a half of them participated in regular non-pharmacological therapy and the other half of the subjects did not participate. The level of cognitive functioning processes was examined with the MMSE (Mini-Mental State Examination) and the Clock Drawing Test, and the level of independence was measured by the Barthel Index of a patient's assessment.

Keywords: dementia, cognitive processes, non-pharmacological therapy

Introduction

Jean Améry (2018) in one of his books entitled *On Aging: Revolt and Resignation* wrote 'society must do everything to relieve the plight of the aging and old people. I still continue arguing that all heart-flowing and respectable efforts in this regard may indeed alleviate—so to speak, they are harmless painkillers—but they cannot bring fundamental change or improvement to the tragedy of aging' (p. 11-12). However, what to do if there come diseases that rob a person of his/her fondest memories and memory with the old age as in case for people with dementia. Allopsychic disorientation worsens, there is impairment of permanent and deferred memory (of past events) with the progression of the disease, The memory gap widens and covers an increasingly large area of the patient's past. And 'people to whom this diagnosis applies usually complain about a sense of meaninglessness of life or inner emptiness'

(Karbowski, 2021, p. 39), failing to recognize people, objects, unable to dress themselves and perform simple daily activities, as a result being increasingly dependent on the environment (Bogusławski, Drat-Gzubicka, 2011).

Is there any way to prevent this, so that suffering and aging people can get the most out of the time they have left. The research problem was formulated in the form of the question: "Is there a relationship between non-pharmacological methods of therapies and the level of functioning of cognitive processes in people with dementia?" in connection with the aim thus established.

This article is an important contribution to the development of the issue at hand, attempting to find an answer to whether there is a way to slow down the process of neurodegeneration, and thus sustain better functioning of cognitive processes and independence of older people with dementia.

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1. Theoretical basis of the problematic

1.1. Dementia syndromes—ambiguity of definition

Thomas Sobów, defining the term dementia wrote that ‘the World Health Organization’s (ICD-10) formulation and the very similar DSM-IV term depict dementia as a syndrome of symptoms caused by a brain disease, usually chronic or progressive, clinically characterized by multiple impairments of higher cortical functions such as memory, thinking, orientation, comprehension, counting, learning ability, language and judgment’ (p. 575). Numbness albo dullness, also known as dementia, is not a single symptom, nor is it a disease in the sense of a nosological entity with a well-defined clinical picture and a homogeneous etiopathogenesis. The disease poses a serious social, medical and psychological problem, hence the attempt to define it is made by various specialists, with their own and specific terminology. In the DSM-5 and ICD-11, the broad diagnostic category previously called dementia was given a new name, so the term “neurocognitive disorder” is now used.

David Evans and Emmanuel Lee (2013) define dementia as a chronic and progressive brain disease characterized by language, memory, perception, cognitive abilities and personality impairments. The impairment of these functions will affect all aspects of a person’s life and close relationships.

1.2. Dementia syndromes

Dementia has many different forms as the diagnostic category. In both the ICD-10 and DSM-5, it is differentiated into many subcategories, which differ from each other. However, they also have much in common, being characterized by a global decline in cognitive functioning, primarily deficits in the area of memory and other higher intellectual functions (Kędziora-Kornatowska, Polak-Szabela, 2019). Correct diagnosis is crucial to select appropriate medications and attempt to prolong the patient’s dignified life. Christine Whatmough (2021, p. 4) writes that ‘among cases of dementia that began after the age of 65, by far the most common form is Alzheimer’s disease, which,

as the only type of dementia or as an element in mixed dementia syndrome, accounts for up to 75% of all dementias. The next most common type of dementia may be vascular dementia or dementia with Lewy bodies (publications vary on this issue)—in clinics, these forms can account for 15-20% of dementia syndromes. Frontotemporal dementia is diagnosed in 5-6% of patients with dementia. Dementia in Parkinson’s disease is often mixed.’ Therefore, because of extremely broad subject of dementia, in this article the most common forms of this disease have been introduced.

1.2.1. Alzheimer Disease (AD)

Alzheimer’s disease is the most common cause of dementia as possible. During this disease, brain tissue breaks down, and thus brain volume decreases, the cerebral cortex atrophies. According to Maria Barcikowska (2017, p. 45), ‘it is a degenerative brain disease that most often causes dementia in people over the age of 65. It is caused by the deposition of proteins in the brain with a pathological beta-fold structure.’ Characteristic features of Alzheimer’s patients are impaired episodic memory, the presence of deficits in at least one cognitive function (impaired executive actions, aphasia, apraxia, agnosia), lack of persistence of the memory trace, and difficulties in learning new material (Kędziora-Kornatowska, Polak-Szabela, 2019). As the disease progresses, the disorders intensify. Specialists speculate that the disease takes longer to develop than it was previously thought and the asymptomatic period lasts from few to several years. In the beginning, the person with the disease will need little supervision and periodic care, but in the final stage, when the person with Alzheimer’s is no longer able to get out of bed, nursing remains (Nestorowicz, 2021).

1.2.2. Dementia with Lewy Bodies (DLB)

Characteristic of dementia with Lewy Bodies is impaired vision, fainting, delusional thinking, falls, body rigidity, swallowing problems, and reactions to drugs, which can be extreme and bizarre (Snow, 2019). Deficits in executive functions, psychomotor retardation, fluctuations in cognitive status, visual-spatial dysfunction (significantly aggravated in the early stage) and attention deficit disorder (mainly in terms of sustaining

attention) arise. An additional characteristic of Dementia with Lewy Bodies is the presence of distinct, detailed, repetitive visual hallucinations. There is often vacillation and irritability (Kędziora-Kornatowska, Polak-Szabela, 2019). Whatmough (2021) pointed out that Dementia with Lewy Bodies differs from Alzheimer's disease in several aspects namely: it occurs much more often in men than in women, symptoms in men are more severe and aggressive than in women and the duration of the disease (from onset to death) is 1-5 years, much less than with Alzheimer's disease, onset of the disease before the age of 70 is more common and is associated with faster progression of the disease and gait and balance disturbances must occur either simultaneously or within a year before or after the onset of cognitive impairment or psychiatric symptoms.

1.2.3. Vascular Dementia

The literature does not clearly define a single, classic picture of cognitive impairment in vascular dementia. The cognitive deficits and behavioural symptoms most characteristic of the profile of vascular dementia are: slow pace of processing, disturbances in the dynamics of behaviour and the emotional-motivational sphere, disturbances in the process of storing information, and impaired processes of free attention (Kędziora-Kornatowska, Polak-Szabela, 2019). According to Rachel J. Schindler (2005), vascular dementia differs from Alzheimer's disease in several respects: vascular dementia usually has an abrupt onset, following a stroke, and can have a variable, non-linear course; deficits in executive functions, which are an interrelated system involving planning, organization, conceptual thinking and flexibility of thought, come to the fore in vascular dementia; and people with vascular dementia may not experience cognitive deterioration for up to 6 months.

1.2.4. Frontal Dementia (FTD)

Frontotemporal dementia, known as Pick's disease, as the name suggests, is a progressive degenerative disease of the central nervous system, mainly of the prefrontal cortex and anterior temporal cortex (Wysokinski, Gruszczynski, 2008). Features of the profile of cognitive impairment in frontotemporal dementia include

the dominance of executive function disorders with usually good spatial orientation and praxis preserved, as well as speech disorders, echolalia and perseveration. In the course of this dementia, personality and behavioural disorders appear earlier in the form of inappropriate actions, as well as reactions perseverations, utilitarian behaviour, stereotypical behaviour, without a plan, emotional lability, hyper-errorism (Kędziora-Kornatowska, Polak-Szabela, 2019).

1.2.5. Parkinson's Disease with Dementia (PDD)

Parkinson's disease is a hypokinetic movement disorder, the characteristic symptoms of which are tremor, bradykinesia (slowing of movement), muscle rigidity and, in a later phase, postural instability (Tröster, Woods, 2021). Today, it is widely believed that 20-40% of patients with Parkinson's disease develop dementia, although some estimates put the rate of dementia in Parkinson's disease as high as 70% (Whatmough, 2021). According to Kornelia Kędziora-Kornatowska and Anna Polak-Szabela (2019, p. 39), "in dementia occurring in Parkinson's disease, among the cognitive dysfunctions, disorders of involuntary and free attention (focusing attention) predominate, there may be fluctuations during the day and from day to day, bradyphrenia occurs, executive functions are significantly impaired (...) as well as visuospatial functions."

Patients in the early stages of Parkinson's disease perform poorly in tasks that require efficient manipulation of information in working memory, while correctly performing tasks that measure memory span. Deficits can also be observed in the performance of tasks requiring divisibility and selectivity of attention. The reasons for the low level of task performance are attributed to limitations in both attentional resources and the ability to change the focus or direction of attention (Tröster, Woods, 2021).

1.3. Cognitive processes in dementia

In literature, one can find an elementary and complex division of cognitive processes. The elementary ones include: attention, cognitive control, perception and memory. In complex cognitive processes, we distin-

guish: thinking, problem solving, decision making and language use (Nęcka et al., 2020). Topics related to cognitive processes are extensive and complex therefore for the purposes of this research three elements of these processes are described: memory, attention, and orientation to time and place otherwise known as *allospsychic orientation*. Maria Pączalska (2014) defines memory as a process during which a person records, stores and reproduces information about plans, intentions and tasks that he or she must perform in the future (prospective memory), as well as his or her own past and the world (retrospective memory), a kind of memory storehouse, i.e. a collection of information that a person has recorded over the course of his or her life. Therefore, as Schacter and Tulving (1982, after: Nęcka et al., 2020, p. 299) write, 'human memory is not a monolithic system. Under this term there are many separate but internally integrated systems. Their common feature is the function that memory as a whole performs. Namely, it creates the possibility of using the information stored in it. The more effectively this function can be carried out all, the more effective is the phylogenetic ability of our mind to remember, store and repress information.' It is worth mentioning that the structure that is the hippocampus forms the most important groupings of nerve fibers that are involved in memory formation, it is the one that decides which information is to be remembered and which is to be forgotten (Anastasiadou, Meyer zu Reckendorf, Beck, 2022).

A. Falkowski, T. Maruszewski, and E. Nęcka (2008, p. 445) write that attention 'is responsible for reducing information overload. Since the cognitive system can process only a fraction of what is potentially available to it, it must control the processes of receiving and processing information to avoid dangerous effects of overload.' Due to the complexity of the problem of attention, attempts are made to isolate its basic features. Peter French (2000) distinguished such features as focus (concentration, focus, intensity, energy) of attention, selectivity (selectivity) of attention, metastability (dynamics, flexibility) of attention, range (capacity) of attention, divisibility of attention, arousal of attention. Andrewes (2001, after: Pączalska et al., 2019), on the other hand, distinguished four systems that make up attention,

pointing to: the activation system, the orientation system, the executive attention system, and the perceptual attention system—that is, the ability to select.

Allopsychic orientation is otherwise known as time and place orientation, meaning that a person with a disorder of this cognitive sphere will have difficulty in determining where, when and what situation they are in (Sobierajewicz, Czaińska, 2019). Disorders of topographical orientation (orientation as to place) are typical of dementia occurring in the elderly age, that is why, many sufferers cannot leave the house on their own, as they tend to get lost, and they are also forever looking for various objects that they have hidden somewhere in the house, but cannot find where they put the object. It happens that people with topographical orientation disorder remember that they hid something, but have difficulty in finding the place where they hid it (Pączalska, 2014).

Time orientation disorders, as can be inferred, refer to problems with determining the current date, time, etc., as well as embedding particular events in time. People suffering from dementia often have problems determining the current date. Logical thinking related to time also poses a problem for them, e.g. they know they have grandchildren, but claim their children have not grown up yet, they are still young.

1.4. Non-pharmacological therapies in dementia

Pharmacotherapy is often an integral component needed for people with dementia diseases to live better. However, non-pharmacological therapy is also needed to keep the patient functioning well for as long as possible, as many specialists emphasize. These two therapies must work together so that patients with dementia can enjoy their lives for as long as possible and retain as much awareness of their existence as possible. In dementia patients, non-pharmacological methods serve two important functions: they support the pharmacological process and can improve or remove many of the psychiatric symptoms observed in dementia, and it can stimulate function and slow down the progression of the disease (Wojcik-Topór, 2018). According to A. Borzym: 'The introduction of various types of

activities not only activates people with dementia, but also stimulates the cognitive abilities that are still preserved, helps maintain practical skills, improves well-being and alleviates the behavioural disorders that occur' (2021, p. 50).

Three non-pharmacological therapeutic methods used in therapy with people with dementia were used in this study, and these are psychological therapy, reminiscence therapy and occupational therapy.

1.4.1. Psychological therapy

Psychological therapy is a type of therapy, during which training of memory, attention, concentration, hand praxis, executive functions, therapy of spatio-temporal orientation, psychotherapy take place. As P. Wojcik-Topór (2018, p. 461) writes, 'psychological therapy will activate psychomotor processes in the area of small motor skills: through hand praxia exercises, tasks involving the reproduction of figures, construction exercises, catching up missing elements. (...) The therapist attempts to shift attention, for example, during conversation or solving cognitive tasks, while stimulating visual and auditory perception.'

1.4.2. Reminiscence therapy

Reminiscence therapy has been introduced into the care of people with dementia and has taken various forms. At its most basic, it involves talking about past events and experiences, usually with the help of tangible cues, such as photos, music, household items, etc. (Woods, O'Philibin, Farrell, Spector, Orrell, 2018). It mainly involves talking about specific topics using so-called memory anchors. These include videos, scrapbooks, old photographs, personal objects, CDs of music familiar to the patient. A form of therapy can also include redecorating a room so that it resembles an interior from years past (Wojcik-Topór, 2018).

1.4.3. Occupational therapy

In contrast, the aim of occupational therapy is to maintain the ability to perform activities that are meaningful to the person with dementia. During the therapy, these activities are simplified and im-

plemented in such a way as to optimize patient's engagement (Bennet et al., 2019). Occupational therapy aims to consolidate skills still possessed by the patient. It allows to recreate those that have recently been lost, and thus motivates activity and meets the social and psychological needs of the patient, prevents the appearance of psychopathological symptoms and behavioural disorders, and sustains retained skills.

2. Description of the methods used and how data was collected

The survey was conducted from June 2022 to December 2022 and was individual in nature. Subjects were recruited through a verbal invitation to participate in the study. Each participant declared, and his or her caregiver confirmed, that he or she had been diagnosed with dementia and determined whether he or she was participating in non-pharmacological therapeutic interventions (whether participants and their caregivers were informed of the voluntariness of participation in the study and the possibility of opting out. The person was invited to a pre-prepared office, the investigator conducted tests starting with the Mini-Mental State Examination (MMSE), which is used to test mental status and allows quantitative measurement of cognitive functioning. This was followed by the Clock Drawing Test, which tests the level of visuospatial orientation and how it contributes to the construction deficit, and whether there is a problem with time comprehension. Patient assessment, according to the Barthel Index, was done through an interview with the subject's caregiver, which measures independence and mobility in people with neurodegenerative diseases.

The study included 64 people (49 women and 15 men), but 4 people dropped out during the study so the target full study was 60 people (48 women and 12 men), adults diagnosed with dementia disease. 30 of the subjects were those not participating in any non-pharmacological therapeutic activities, and the remainder were participants in Day Care Homes for people with dementia disease who are in regular therapy. The age distribution of the subjects was as follows: 10 subjects under 60 years of age, which accounted for 17% of the study group, between 61

and 75 years of age there were 16 subjects (27%), between 76 and 90 years of age there were 32 subjects (53%) and 2 subjects over 90 years of age accounted for 3% of the study group. The youngest participant in the study was 49 years old, while the oldest was 91.

3. Test results

The following are the results obtained from the tests conducted with the Mini-Mental State Examination (MMSE), the Clock Drawing Test and the Barhel Scale.

3.1. Scores obtained by the subjects in the Mini-Mental State Examination (MMSE)

The distribution of subjects by their scores on the Short Mental State Evaluation Scale (MMSE) is as presented in Table 1.

In the study group that did not participate in non-pharmacological therapeutic activities, 1 person (3%) received a normal result, 8 people (27%) each received a result indicating cognitive impairment without dementia and mild dementia, 37% received a result indicating moderate dementia, and 2 people (7%) received a result indicating profound dementia (Table 2.).

In the study group taking part in non-pharmacological therapeutic measures, 3 people (10%) each received a normal result and a result indicating cognitive impairment without dementia, those who received a result indicating mild and moderate dementia were 10 (33%) each, while a result indicating profound dementia was received by 4 people (14%) (Chart 1.).

3.2. Results obtained by the subjects in the Clock Drawing Test (CDT)

Table 3. presents the distribution of the number of subjects by the results obtained in the Clock Drawing Test.

In the group not participating in non-pharmacological therapeutic methods, 12 subjects (40%) obtained a score indicating that the drawing of the entire clock is generally correct, while 18 subjects (60%) obtained

Table 1. Distribution of the number of subjects (N = 30) due to the assessment of the depth of dementia on the basis of the results of the MINIMENTAL test – the Mini-Mental State Evaluation Scale (MMSE) in subjects not participating in non-pharmacological therapeutic methods

Assessing the depth of dementia	N	%
30 – 27 – result correct	1	3
26 – 24 – cognitive impairment without dementia	8	27
23 – 19 – mild dementia	8	27
18 – 11 – intermediate dementia	11	37
10 – 0 – profound dementia	2	7
Total	30	100

Table 2. Distribution of the number of subjects (N=30) due to the assessment of the depth of dementia on the basis of the results of the MINIMENTAL test – the Mini-Mental State Evaluation Scale (MMSE) in subjects participating in non-pharmacological therapeutic methods

Assessing the depth of dementia	N	%
30 – 27 – result correct	3	10
26 – 24 – cognitive impairment without dementia	3	10
23 – 19 – mild dementia	10	33
18 – 11 – intermediate dementia	10	33
10 – 0 – profound dementia	4	14
Total	30	100

Table 3. Distribution of respondents (N=30) by scores on the Clock Drawing Test by those not participating in non-pharmacological therapies

Test result	N	%
10 – 6 – drawing the entire clock is generally correct	12	40
5 – 1 – drawing of the clock face–circles and numbers is disturbed	18	60
Total	30	100

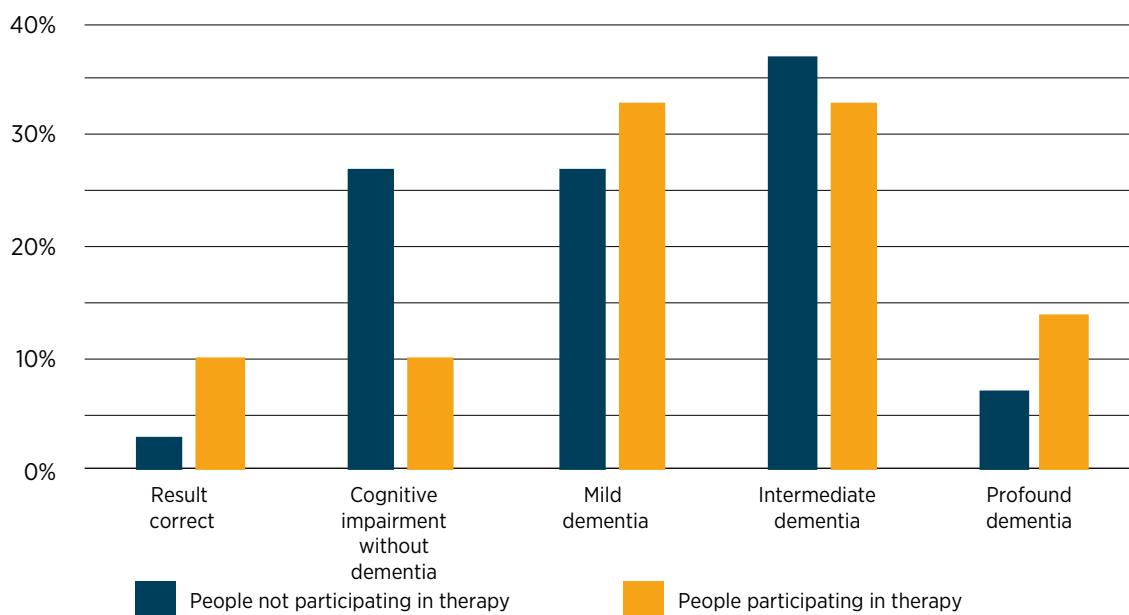


Chart 1. Results obtained by subjects in the MINIMENTAL test.

a score indicating that the drawing of the clock face—circle and digits—is impaired. To illustrate the distribution of the number of subjects not participating in non-pharmacological therapeutic methods, the results of the Clock Drawing Test are shown in the Chart 2.

A score indicating that the drawing of the clock is generally correct was obtained by 15 subjects, representing half of the group participating in non-pharmacological therapeutic methods, while the other half obtained a score indicating that the drawing of the clock face—the circle and digits—is disturbed. In order to illustrate the distribution of the number of subjects participating in non-pharmacological therapeutic methods, the results obtained from the Clock Drawing Test are shown in the Chart 2.

3.3. Scores obtained by the subjects on the Barthel Index

The following is the distribution of the number of subjects by the scores they obtained in the patient assessment according to the Barthel Index (Table 5).

Twenty-six respondents (87%) not participating in non-pharmacological therapies received a score describing the patient’s condition as ‘light’, while

the remaining four respondents (13%) received a score describing the patient’s condition as ‘moderately severe.’

The distribution of the number of study subjects participating in non-pharmacological therapeutic interactions, due to the score obtained in the patient’s assessment according to the Barthel Index, is presented in Table 6.

Twenty-five people (83%) received a score that describes their condition as ‘light’, while the remaining 17% of the study group received a score that describes the patient’s condition as ‘moderately severe’ (Chart 3).

3.4. Non pharmacological therapeutic methods and cognitive processes in dementia

Students’ t-tests for independent data were performed to compare the level of the studied variables between those not participating in non-pharmacological therapeutic methods and those participating in non-pharmacological therapeutic methods. The results of the test showed that cognitive functioning (as measured by the MINIMENTAL test) of those not

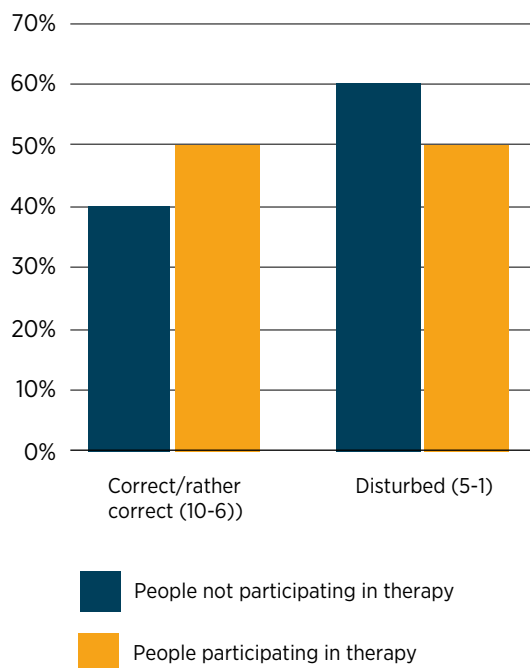


Chart 2. The chart shows the results obtained by the subjects in the Drawing Test.

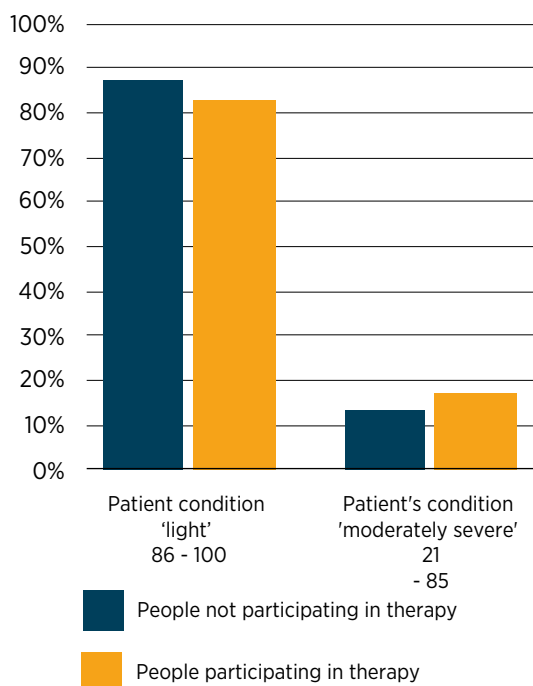


Chart 3. The graph shows the results obtained by the subjects in the patient assessment according to the Barthel Index.

Table 4. Distribution of respondents (N=30) by scores on the Clock Drawing Test by those participating in non-pharmacological therapies

Test result	N	%
10 - 6 - drawing the entire clock is generally correct	15	50
5 - 1 - drawing of the clock face-circles and numbers is disturbed	15	50
Total	30	100

Table 5. Distribution of subjects (N=30) by patient scores according to the Barthel Index in those not participating in non-pharmacological therapies

Test result	N	%
86 - 100 pkt. - patient condition „light”	26	87
21 - 85 pkt. - patient's condition 'moderately severe'	4	13
0 - 20 pkt. - patient's condition 'very severe'	0	0
Total	30	100

Table 6. Distribution of subjects (N=30) by patient scores according to the Barthel Index in those participating in non-pharmacological therapies

Test result	N	%
86 - 100 pkt. - patient condition 'light'	25	83
21 - 85 pkt. - patient's condition 'moderately severe'	5	17
0 - 20 pkt. - patient's condition 'very severe'	0	0
Total	30	100

in non-pharmacological therapy was non-significantly higher than that of those in non-pharmacological therapy— $t = 0.662$; $p = 0.511$.

On the other hand, the results of the Clock Drawing Test showed that the visual-spatial orientation and time comprehension of those in non-pharmacological therapy is slightly higher than that of those not in therapy $t = -0.37$; $p = 0.713$ (Table 7).

Table 7. Differences in the level of functioning of cognitive processes in people with dementia not participating and participating in non-pharmacological therapeutic methods

	People who are not in therapy N = 30		People who are in therapy N = 30		Differences (T-test)		
	M	SD	M	SD	t	df	p
MMSE	18.9	5.87	17.87	6.22	0.662	58	0.511
CDT	5.4	3.09	5.7	3.19	-0.37	58	0.713

N-abundance; M-mean; SD-standard deviation; t-test statistic; p-statistical significance.

Table 8. Differences in independence and motor skills of people with dementia not participating and participating in non-pharmacological therapies

	People who are not in therapy N = 30		People who are in therapy N = 30		Differences (T-test)		
	M	SD	M	SD	t	df	p
Barthel Index	94.5	11.5	93.7	11.2	0.285	58	0.777

N-abundance; M-mean; SD-standard deviation; t-test statistic; p-statistical significance.

3.5. Non-pharmacological therapeutic methods vs. independence and motor skills in dementia

In order to compare the level of independence and motor skills between those not participating in non-pharmacological therapeutic methods and those participating in non-pharmacological therapeutic methods, Students' t-tests were performed for independent data. The results of the test showed that the independence and mobility (as measured by the Barthel Index patient assessment) of non-therapy participants was non-significantly higher than that of non-pharmacological therapy participants— $t = 0.285$; $p = 0.777$ (Table 8).

3.6. Level of cognitive functioning and independence in people with dementia

In order to test whether there is a relationship between the level of cognitive functioning and independence in people with dementia, a Person correlation analysis was conducted between the level of cognitive functioning, as assessed by the Mini-Mental State Examination (MMSE), and the level

of independence as measured by the Barthel Index. The correlation indicator turned out to be weak, but still significant, at 0.214. This means that the level of cognitive functioning correlates positively with the level of independence in the subjects. The higher the level of functioning of cognitive processes, the higher the level of independence of these people will be.

4. Discussion of results

The purpose of the study was to see if there is a relationship between non-pharmacological therapeutic methods and the level of functioning of cognitive processes in people with dementia, and what the relationship is. Therefore, taking into account all the above theoretical premises and expert opinions, the following research hypotheses were set:

- H1: The cognitive processes of people with dementia who participate in regular nonpharmacological therapy are at a higher level.
- H2: People who are not on non-pharmacological therapy are less independent.

H3: People whose cognitive processes are at a higher level are more independent.

The first hypothesis, which assumed that the cognitive processes of people with dementia who participate in regular non-pharmacological therapy are at a higher level, was not confirmed. The average score obtained on the MINIMENTAL test by those who do not participate in non-pharmacological therapies is 1 point higher than the average score of those who participate in non-pharmacological therapies. In the Clock Drawing Test, those not participating in non-pharmacological therapeutic interventions scored 0.3 points worse on average than those participating in the therapy. In both tests conducted, the difference in scores for the two groups is not significant. The above studies showed that there is no relationship between non-pharmacological therapeutic interventions and the level of cognitive functioning in dementia.

Another hypothesis assumed that those on non-pharmacological therapy were less independent. This hypothesis was also not confirmed. The mean score obtained in the Barthel Index patient assessment by those not participating in non-pharmacological therapy is 0.8 points higher than in those participating in non-pharmacological therapy. This is a non-significant difference and indicates that participation in non-pharmacological therapeutic interactions has no effect on the independence of people with dementia.

The third hypothesis, which assumed that people whose cognitive processes are at a higher level are more independent, was confirmed. A weak but still significant positive correlation was shown between the level of cognitive functioning measured by the MINIMENTAL test and independence measured by the patient's assessment according to the Barthel Index. The study showed that the higher the level of cognitive functioning, the higher will be the level of independence of people with dementia.

Although the first two hypotheses in the present study have not been confirmed, specialists recommend non-pharmacological therapeutic interactions and believe that this is an important step in the management of the patient in daily care. An important advantage of introducing non-pharmacological therapeutic methods into the life of a person with dementia is the fact that

these interventions make it possible to reduce the severity of behavioural disorders (Dlugosz-Mazur, Bojar, Gustaw, 2013). The patient benefits more from non-pharmacological therapeutic methods when they are introduced quickly after early diagnosis. Unfortunately, as the disease progresses, the role of non-pharmacological interventions diminishes (Domagała, Sitek, 2018).

In describing the various non-pharmacological therapies used in patients with dementia, Wojcik-Topór (2018) also writes that some scientific communities put non-pharmacological therapy on a par with pharmacotherapy for patients with dementia.

A. Domagała and E. Sitek (2018, p. 255) state that 'Non-pharmacological management is considered an important part of treatment, it is the subject of positive opinions formulated in the medical field, addressed both to specialists involved in pharmacological and non-pharmacological treatment, as well as to caregivers of sick people.'

Non-pharmacological therapeutic interactions are also important for the families of sick people, as they help relieve the burden of constant care. Any type of activities such as intellectual activation, education, etc. will certainly make life easier not only for the sick person, but also for their loved ones, prolonging the progression of the disease (Wojcik-Topór, 2018).

A. Borzym (2021, p. 52) wrote about reminiscence therapy and reality orientation training that 'they can reduce feelings of confusion and isolation, improve the patient's well-being and communication with the environment; in addition, reminiscence therapy aims to strengthen the patient's sense of identity.'

Referring to the above-mentioned authors, it can be concluded that the research conducted for this study has the potential to continue in the future and explore the topic of non-pharmacological therapeutic methods and their impact on cognitive function in dementia.

Summary

The aim of the present study was to find a relationship between non-pharmacological therapies and cognitive processes in dementia. In the presented study, no significant relationship was found between the level of functioning of cognitive processes and participation

in non-pharmacological therapeutic interactions among 60 people, 30 of them were participants in non-pharmacological therapies, and the rest of the group was not. To verify the hypotheses, the MINIMENTAL test – Mini-Mental State Examination (MMSE), the Clock Drawing Test and the Barthel Index patient assessment were used.

The results obtained were subjected to statistical analysis. Summarizing the results obtained in the study, the following conclusions can be reached:

- participation in non-pharmacological therapeutic interventions does not substantially affect the level of cognitive functioning in dementia;
- participation in non-pharmacological therapeutic interventions does not affect the level of independence of people with dementia;
- the independence of people with dementia is higher when their cognitive processes are at a higher level.

The conclusions of a theoretical nature that were put forward imply the need for further research of a practical nature. This is the realization of the prac-

tical purpose of the work. Thus, it can be said that despite the failure to confirm the hypothesis that there is a positive relationship between non-pharmacological therapeutic methods and the level of functioning of cognitive processes in dementia, it is worthwhile to activate people with dementia in order to increase emotional and social competence. It would be beneficial for people with dementia to organize daily life trainings in order to maintain as much independence as possible for patients, and thus maintain the functioning of cognitive processes at a higher level. It is necessary to educate the public and, above all, the families of dementia patients on how to work and care for a person with dementia.

The results obtained are only a small part of the studied reality. Although the main hypothesis has not been confirmed, the subject of the effect of non-pharmacological therapeutic methods on the level of functioning of cognitive processes deserves more attention. It would be worth conducting a broader study, on a larger number of people, taking into account more variables.

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