ORIGINAL RESEARCH

The Effect of Holistic Therapy in Alzheimer's Disease

Mümüne Merve Parlak, PhD; Özlem Bizbinar, MD; Ayşen Köse, PhD

ABSTRACT

Background/Aim • Cognitive, psychological, and behavioral problems that occur in individuals with Alzheimer's disease (AD) cause impairments in the daily living functions of patients and affect their quality of life adversely. Non-pharmacological treatments are becoming more and more prominent due to the lack of side effects and the effective results from various studies. This study aims to examine the effectiveness of holistic therapy (reminiscence, music, and reality orientation therapy) on depression levels, quality of life, and cognitive status in individuals with AD.

Methods • Ten people with AD were included in the holistic therapy program for six weeks and ten were included in the control group. All individuals took the mini-mental state examination (MMSE), geriatric depression scale short form (GDS-SF), Nottingham health profile (NHP), and World Health Organization quality of

life instrument, elderly module, Turkish version (WHOQOL-OLD) before and after the therapy.

Results • The initial and final assessment results were compared in the therapy group; there was a significant increase in the MMSE scores and a significant decrease in the GDS-SF scores ($P < .05$). According to the NHP and WHOQOL-OLD scales, there was a significant increase in the quality of life of the patients in the therapy group ($P < .05$).

Conclusion • In this study, a significant improvement was observed in the therapy group in the following aspects: cognition, depression level, and quality of life–especially in sleep, social isolation, emotional reaction, energy, autonomy, intimacy, fear of death, and emotional ability areas. Therefore, non-pharmacological treatment, such as holistic therapy, can be used together with pharmacological treatment in people with AD (*Altern Ther Health Med.* 2023;29(3):52-59).

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INTRODUCTION

Alzheimer's disease (AD) is a progressive neurodegenerative disorder that manifests primarily with memory impairment but also affects other components of cognitive functions such as decision-making, attention, and orientation.[1-3] Behavioral disorders are also seen over the course of the disease in approximately 90% of patients along with cognitive loss.[4,5] This situation can lead to depression, apathy, agitation, and even psychosis with hallucinations and delusions. Cognitive, psychological, and behavioral problems

that occur in individuals with AD cause impairments in the daily living functions of patients and affect their quality of life adversely.[5,6]

Pharmacological and non-pharmacological methods are used for the treatment of AD. Non-pharmacological treatments are becoming more and more prominent due to the lack of side effects and the effective results from various studies. According to the American Psychiatric Association, these non-pharmacological treatments are cognitive therapy (skills training, reality orientation), emotional therapy (reminiscence), behavioral therapy, and stimulation therapy (sensory stimulation and music therapy).[1]

Reminiscence therapy is an emotional non-pharmacological treatment method that is generally administered in a group and sometimes individually.[7] The remembrance of important past experiences, positive experiences, and achievements is based on the principle that these are shared by members of the group through verbal interaction.[8,9] Reminiscence therapy is often used in people with AD. Studies have shown that it improves the quality of life and cognitive functions in an individual with AD.[1,8]

Music therapy, which is a stimulation non-pharmacological treatment method, provides cognitive activation by affecting the cortical and subcortical regions of the brain, particularly limbic and paralimbic areas.[10,11] Many studies show that music therapy has a regulating effect on blood pressure, heart rate, and respiratory rate as well as cognitive functions. In addition to the behavioral and psychological symptoms, music therapy is effective in cognitive functions such as executive functions, memory, and attention in people with AD.[12] Therapies usually use music that patients are familiar with and choose.[13,14]

Reality orientation therapy is the first non-pharmacological treatment method that is used to increase cognitive activity in individuals with dementia.[15] It aims to restructure the cognitive education of dementia patients. Reality orientation therapy involves providing the patient with continuous memory and orientation information in order to help them remember a person, location, and time orientation. Moreover, it helps in retrieving impaired mental capacity. On the other hand, it tries to increase impaired mental capacity again.[16]

Music, reminiscence, and reality orientation therapies are not new techniques; they have been applied to individuals with dementia in many studies. Many studies use one or two of these non-pharmacological treatment methods in an individual with AD.[17,18] Although most of these studies examine the effects of therapies on cognition and quality of life, the sub-areas of quality of life they affect have not been examined yet. In addition, no study uses three therapy techniques–based on emotion, cognition, and stimulation–together, evaluates with two separate quality-of-life scales, and evaluates different sub-areas of quality-of-life and depression. As far as we know, no study examines different sub-dimensions of quality of life, which is the most important goal of treatment in individuals with dementia.

Therefore, this study aims to investigate the effect of holistic therapy on the cognitive status, depression level, quality of life, and different sub-dimensions of quality of life in individuals with AD, by using reminiscence therapy, music therapy, and reality orientation therapy, which are cognitive, sensory, and emotional non-pharmacological treatment methods.

METHODS

This was an experimental study involving pre-test and post-test designs and study-control groups. This study was performed in the Dementia Polyclinic of Neurology Clinic. Ethical approval was granted by the hospital ethics committee at the TC University of Health Sciences, Dışkapı Yıldırım Beyazıt Training and Research (approval number 62/12).

Participants

Participants were determined according to the exclusion and inclusion criteria among the dementia patients who visited the neurology clinic and were diagnosed with AD according to the diagnostic criteria of the DSM-V (Diagnostic and Statistical Manual of Mental Disorders) and National Institutes of Neurological and Communicative Disorders and Stroke and Alzheimer's Disease and Related Disorders Association (NINCDS ADRDA).[19]

Inclusion Criteria. Being between 60–90 years old, being diagnosed with mild or moderate Alzheimer's by clinical dementia rating (CDR) scale diagnosis criteria by the neurologist, receiving a score between 13 and 24 (MMSE ≥ 14) from the standardized mini-mental state examination (MMSE). The base score of 14 was taken because the study was an assessment of the quality of life and studies show that those with an MMSE of 13 or above may have the ability to make decisions as required.[20] In addition, in our previous study to measure the quality of life and depression status in AD, it was observed that the information obtained from the family of patients with an MMSE score of 14 and above as well as the patients themselves, was consistent with the scales used in this study.[6]

Exclusion Criteria. Having an additional neurological condition (e.g. Parkinson's disease, multiple sclerosis, and stroke), having any disability that may affect the treatment and prevent the evaluation of the patient, and having previously received non-pharmacological therapy.

Forty-five patients met the inclusion and exclusion criteria. Twelve people wanted to join the therapy voluntarily. Two of them stated that they could not attend the therapies because they were unwell before the therapy sessions started. Among the remaining 33 patients, 10 people who were compatible with the treatment group by age, education, and gender were selected randomly and included in the control group (Figure 1).

Therapy Groups. Ten individuals with AD (four men and six women with a mean age of 78.40 ± 7.9 years) formed the therapy group. To facilitate the activities in the therapy and intra-group agreement, these 10 people were further divided into two groups of five people, created according to their educational backgrounds. While Group 1 (two men, three women) consisted of uneducated participants (never received formal education/illiterate), Group 2 (two men, three women) consisted of educated participants (received formal education/literate). People in this group continued to receive their pharmacological treatment along with holistic therapy.

Control Groups. Ten individuals (five men and five women with a mean age of 70.90 ± 6.49) with AD formed the control group and they were further divided into two groups according to their educational background. While Group 1 (two men, three women) consisted of uneducated participants, Group 2 (three men, two women) consisted of participants who were educated. Therapy was not provided to individuals in the control group. People in this group continued to receive pharmacological treatments only. However, according to the results of the evaluation, they may receive therapy if they wish to at a later point (Figure 1).

Therapies

The people in the two therapy groups had therapy every Thursday for six weeks. Reality orientation therapy was administered at the same time as reminiscence therapy.

Figure 1. Summary of the method
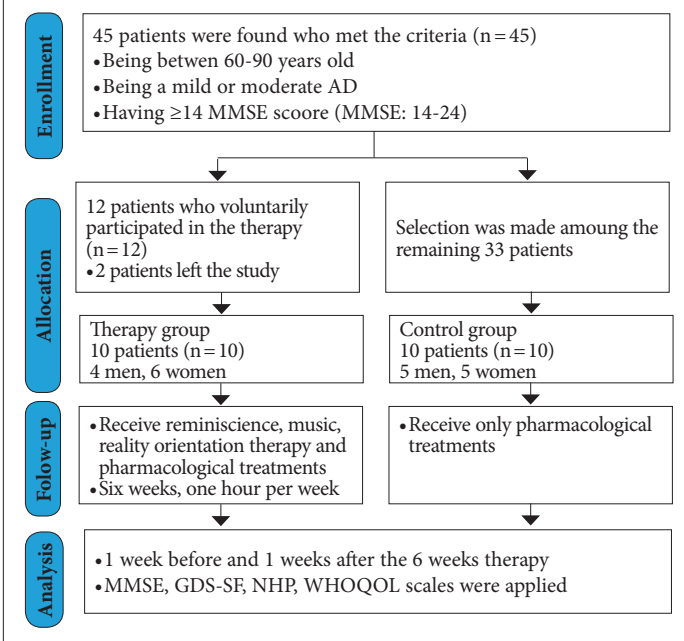
Literature suggests that reminiscence therapy can be implemented in single or group form, in 30–60 minute sessions, one to two times per week, lasting 6–12 weeks.[21] Therapy sessions were held for one hour per week. In the therapy program, three therapy methods were applied by the speech and language therapists in each session: reminiscence, music, and reality orientation therapy. The materials required for the therapy were requested from the families of the participants one week in advance. The participants were seated in a circular seating arrangement where everyone could see each other. People in this group continued to receive their pharmacological treatments.

Reminiscence Therapy. One topic was chosen each week. These topics were determined from the past experiences of the participants in the group, such as marriage, family, military service, and profession. Information was obtained from the family about the selected topic and photographs were requested. In this way, reminders and guidance were made during therapy, if required. A fluent dialogue was established in the group, with equal time for all participants. This section lasted 25–35 minutes, as per the topic.

Music Therapy. Around 5–10 minutes per therapy session were allocated for music therapy. The music chosen from today and the past experiences of participants were used. Families were also asked to write six to seven pieces of the songs the participants knew and enjoyed. Each week, two songs that were common favorites of the patients, were chosen. These music pieces were arranged prior to the session so that each piece started from the chorus part. Music therapy was applied not only in the form of listening to a song but also for the adaptation, intonation, singing, and resuming of the song when the music was stopped. In addition, music pieces were also used during reminiscence therapy and the memories recalled by music were discussed.

Reality Orientation Therapy. Participants were given reality orientation training for person, place, and time at the beginning of each session. This section lasted 30–35 minutes in our study; it has been employed in sessions lasting 30–60 minutes in the literature.[22,23] Participants were asked about their personal information (name, place of birth, marital status, occupation, number of children, and children's names), other personal information (the name of the therapist and friends, marital status of therapist and friends, occupation of therapist and friends), locational information (place of therapy, home address, current city, city of birth, country), and time information (approximate time, day of the week, current date, date of birth). Several questions were asked: "What day is it today?"; "What year is this?"; "What is my name?"; "What are the names of the friends in your group?", etc. Each participant was asked these questions over three rounds so that information was obtained from each participant. Errorless teaching technique was used in all stages of therapy.

Data Collection Tools

All individuals were assessed along the MMSE, geriatric depression scale short form (GDS-SF), Nottingham health profile (NHP), and World Health Organization quality of life instrument, elderly module, Turkish version (WHOQOL-OLD) by speech and language therapists. All assessment scales were administered twice to the therapy and control groups, a week before and a week after the six weeks of therapy. All scales were scored by asking the questions directly to the patients. Without knowing which group all participants were in, the first and last MMSE evaluations were made by a neurologist and the NHP, GDS, and WHOQOL-OLD evaluations were made by the other clinician. The other clinician, who was unaware of all the evaluation results, conducted the therapy process. In this way, the study was carried out in a single-blind manner.

MMSE. Orientation, early recall, late recall, attention, calculation, language, and visuospatial abilities were evaluated. The test was scored on 30 points. Turkish validity and reliability of this test have been proven by Güngen.[24]

GDS-SF. This scale consists of 15 items. Depressive symptoms are evaluated in the form of "yes" or "no" questions. A total score of 0–4 indicates no depression, 5–8 indicates mild depression, 9–11 indicates moderate depression and 12–15 indicates severe depression. Turkish validity and reliability of this test have been proven by Ertan and Eker.[25]

NHP. Part 1 of the scale was applied. Part 1 of this scale consists of 38 items and 6 sub-dimensions: pain (NHP P), physical activity (NHP PA), energy level (NHP EL), sleep (NHP S), social isolation (NHP SI), and emotional reaction (NHP ER). Each sub-dimension was scored between 0–100, with a total score (NHP T) of 0–600 points. According to the information obtained from the patient, higher scores were interpreted as a deterioration in the quality of life. Turkish validity and reliability of this test have been proven by Küçükdeveci et al.[26]

WHOQOL-OLD. This scale consists of 24 items with a score between 1.0 and 5.0 for each item. The scale consists of

six sub-dimensions: sensory abilities (WHOQOL SAB), social participation (WHOQOL SOP), death and dying (WHOQOL DAD), intimacy (WHOQOL INT), autonomy (WHOQOL AUT), and past, present, and future activities (WHOQOL PPF). According to the information received from the patient, each sub-dimension was scored between 4 and 20, with higher scores indicating better quality of life. The total score of the six sub-dimensions was calculated as the overall score (WHOQOL T). Turkish validity and reliability of this test have been proven by Eser et al.[27]

Data Analysis

In this study, all analyses were performed after transferring data to the IBM SPSS 23.0 software. Descriptive statistics were evaluated by numbers, mean values, and standard deviation. Non-parametric analyses were used due to the small sample size. The Mann-Whitney U test was used for the comparison of two independent groups (therapy and control groups, educated and uneducated therapy groups, educated and uneducated control groups), the Wilcoxon Signed Ranks test was used for the comparison of repeated measurements (pre-test and post-test), and the Chi-Square test was used for the analysis of categorical variables (gender, education status). The level of statistical significance was chosen as $P < .05$.

RESULTS

There was no statistically significant difference between the age, gender, and education status of the patients in the therapy and control groups ($P = .053$, $P = 1.0$, and $P = 1.0$, respectively) (Table 1). When the initial and final assessment results were compared between educated and uneducated individuals in both groups, no statistically significant difference of any value was found, except for the NHP ER pre-test assessment result in the therapy group. The mean NHP ER initial assessment was calculated to be 26.90 ± 11.87 in the uneducated therapy group and 59.57 ± 20.73 in the educated therapy group ($P = .016$). Since there was no difference between educated and uneducated individuals, the assessment results of the 10-person therapy and 10-person control groups were compared.

Between the therapy and the control groups, no significant difference was found in the MMSE results before therapy ($P = .147$) whereas a significant difference was observed after therapy ($P = .01$). On comparing the final evaluation with the initial evaluation, the MMSE scores were found to be statistically significant and had increased from 21.5 to 24.5 in the therapy group ($P = .005$) and decreased from 19.5 to 18.5 in the control group ($P = .036$) (Table 2).

In the initial assessment, the therapy group NHP S and NHP T scores were found to be significantly higher than that of the control group ($P = .01$ and $P = .02$, respectively). However, there was no statistically significant difference between the scores of NHP S and NHP T of the therapy and control groups after six weeks of therapy ($P = .758$ and $P = .596$, respectively).

Table 1. Comparison of age, gender, and educational background between therapy and control groups

		Therapy group	Control group	*P* value
Age	Mean ± SD	78.40 ± 7.93	70.90 ± 6.49	.053[a]
Gender	women	6	5	1.000[b]
	men	4	5	
Educational background	uneducated	5	5	1.000[b]
	educated	5	5	

[a]Mann Whitney U Test
[b]Chi Square Test;

Abbreviations: SD, standard deviation.

Table 2. Comparison of pre-test and post-test MMSE results between therapy and control groups

	Therapy group (n = 10)	Control group (n = 10)		
	Mean ± SD	Mean ± SD	*U*	*P* value
Orientation 1	6.40 ± 1.08	6.30 ± 1.16	48.000	.904
Orientation 2	8.70 ± 1.06	5.10 ± 1.10	0.500	.0001
Recording memory 1	3.00 ± 0.00	3.00 ± 0.00	50.00	.96
Recording memory 2	3.00 ± 0.00	3.00 ± 0.00	50.00	.96
Attention and calculation 1	4.00 ± 0.94	2.80 ± 1.14	20.500	.024
Attention and calculation 2	4.5 ± 0.71	2.70 ± 1.34	13.000	.003
Recall 1	0.60 ± 0.70	0.30 ± 0.68	36.500	.164
Recall 2	0.8 ± 0.92	0.20 ± 0.63	31.000	.081
Language 1	7.6 ± 0.96	7.40 ± 0.96	13.000	.312
Language 2	7.8 ± 0.92	7.40 ± 1.17	40.000	.236
MMSE 1	21.50 ± 2.95	19.80 ± 2.39	31.000	.147
MMSE 2	24.80 ± 3.01	18.50 ± 3.10	7.000	.001

Although WHOQOL AUT, WHOQOL PPF, WHOQOL SOP, WHOQOL DAD, WHOQOL INT, and WHOQOL T scores were not statistically significant between the therapy and control groups before the therapy ($P > .05$), at the end of the study, these values were found to be statistically different between the two groups ($P < .05$) (Table 3). When the initial and final assessment results were compared in the case of the therapy group, there was a significant increase in the quality of life of the patients according to the NHP as well as WHOQOL scales. Compared to the initial assessment results, there was a statistically significant decrease in all sub-dimensions of NHP, except pain and physical activity, and an increase in all sub-dimensions of WHOQOL in the final assessment results of the therapy group (Table 4).

In the final assessment, GDS-SF scores were statistically significant and had increased from 5.30 to 6.60 in the control group (.042), while depression levels were statistically significant and had decreased from 7.30 to 2.80 in the therapy group (.007) (Table 4 and Table 5).

The initial and final assessment results were compared in the control group; according to the NHP T and WHOQOL T

Table 3. Comparison of pre-test and post-test GDS-SF, NHP, and WHOQOL results between therapy and control groups

	Therapy group (n = 10)	Control group (n = 10)		
	Mean ± SD	Mean ± SD	U	P value
GDS-SF1	7.30 ± 3.50	5.30 ± 3.47	33.500	.207
GDS-SF2	2.80 ± 1.81	6.60 ± 4.30	26.500	.068
NHP P1	12.88 ± 14.61	28.49 ± 30.74	32.500	.180
NHP P2	6.35 ± 12.18	30.84 ± 23.24	15.500	**.007**
NHP ER1	43.24 ± 23.45	33.26 ± 32.96	37.000	.325
NHP ER2	15.76 ± 16.01	35.82 ± 32.97	31.500	.157
NHP S1	40.83 ± 25.02	16.99 ± 30.75	17.000	**.011**
NHP S2	19.12 ± 19.83	23.84 ± 30.39	46.000	.758
NHP SI1	48.30 ± 18.84	29.90 ± 36.15	33. 000	.193
NHP SI2	16.71 ± 13.42	33.43 ± 32.98	40.000	.441
NHP PA1	14.44 ± 16.68	37.99 ± 26.10	23.500	**.043**
NHP PA2	10.14 ± 15.11	44.22 ± 24.33	13.500	**.005**
NHP EL1	54.56 ± 42.73	88.00 ± 195.26	37.000	.307
NHP EL2	27.95 ± 26.88	42.64 ± 38.24	36.500	.296
NHP T1	224.24 ± 84.23	68.75 ± 116.96	10.000	**.002**
NHP T2	96.02 ± 64.38	95.44 ± 122.50	43.000	.598
WHOQOL SAB1	13.50 ± 2.92	10.80 ± 2.62	23.500	**.044**
WHOQOL SAB2	17.20 ± 1.87	9.90 ± 2.42	.000	**.000**
WHOQOL AUT1	12.10 ± 2.08	12.50 ± 4.12	47.000	.819
WHOQOL AUT2	17.40 ± 2.07	11.00 ± 3.20	3.500	**.000**
WHOQOL PPF1	14.00 ± 2.26	13.70 ± 5.79	44.000	.647
WHOQOL PPF2	17.40 ± 1.51	12.50 ± 5.380	17.500	**.013**
WHOQOL SOP1	11.30 ± 3.06	14.20 ± 5.65	33.00	.197
WHOQOL SOP2	17.20 ± 2.53	12.00 ± 4.35	15.000	**.008**
WHOQOL DAD1	10.00 ± 3.89	9.20 ± 5.63	44.500	.674
WHOQOL DAD2	15.90 ± 1.66	8.80 ± 4.98	8.500	**.002**
WHOQOL INT1	12.50 ± 2.59	16.10 ± 3.87	25.000	.056
WHOQOL INT2	16.70 ± 1.42	14.30 ± 3.09	24.000	**.047**
WHOQOL T1	73.40 ± 10.66	76.50 ± 16.91	40.000	.449
WHOQOL T2	99.80 ± 9.46	68.50 ± 13.98	2.500	**.000**

Abbreviations: *U*, Mann Whitney U Test; SD, standard deviation; 1, pre-test; 2, post-test; GDS-SF, geriatric depression scale short form; NHP P, Nottingham health profile pain; NHP PA, physical activity; NHP EL, energy level; NHP S, sleep; NHP SI, social isolation; NHP ER, emotional reaction; NHP T, total score; WHOQOL SAB, World Health Organization quality of life Instrument old module Turkish version sensory abilities; WHOQOL SOP, social participation; WHOQOL DAD, death and dying; WHOQOL INT, intimacy; WHOQOL AUT, autonomy; WHOQOL PPF, past, present, and future activities; WHOQOL T, overall score.

Table 4. Comparison of pre-test and post-test results of therapy group

Therapy group (n = 10)		Pre-test results	Post-test results		
		Mean ± SD	Mean ± SD	Z	P value
MMSE	Orientation	6.40 ± 1.08	8.70 ± 1.06	-2.866	**.005**
	Recording memory	3.00 ± 0.00	3.00 ± 0.00	t: 0.000	.500
	Attention and calculation	4.00 ± 0.94	4.5 ± 0.71	-2.0226	**.050**
	Recall	0.60 ± 0.70	0.8 ± 0.92	-0.943	.346
	Language	7.6 ± 0.96	7.8 ± 0.92	-0.942	.346
	Total	21.50 ± 2.95	24.80 ± 3.01	-2.831	**.005**
GDS-SF		7.30 ± 3.50	2.80 ± 1.81	-2.680	**.007**
NHP P		12.88 ± 14.61	6.35 ± 12.18	-1.826	.068
NHP ER		43.24 ± 23.45	15.76 ± 16.01	-2.803	**.005**
NHP S		40.83 ± 25.02	19.12 ± 19.83	-2.668	**.008**
NHP SI		48.30 ± 18.84	16.71 ± 13.42	-2.810	**.005**
NHP PA		14.44 ± 16.68	10.14 ± 15.11	-1.355	.176
NHP EL		54.56 ± 42.73	27.95 ± 26.88	-2.214	**.027**
NHP T		224.24 ± 84.23	96.02 ± 64.38	-2.803	**.005**
WHOQOL SAB		13.50 ± 2.92	17.20 ± 1.87	-2.814	**.005**
WHOQOL AUT		12.10 ± 2.08	17.40 ± 2.07	-2.809	**.005**
WHOQOL PPF		14.00 ± 2.26	17.40 ± 1.51	-2.814	**.005**
WHOQOL SOP		11.30 ± 3.06	17.20 ± 2.53	-2.809	**.005**
WHOQOL DAD		10.00 ± 3.89	15.90 ± 1.66	-2.807	**.005**
WHOQOL INT		12.50 ± 2.59	16.70 ± 1.42	-2.809	**.005**
WHOQOL T		73.40 ± 10.66	99.80 ± 9.46	-2.805	**.005**

Abbreviations: *Z*, Wilcoxon analysis; SD, standard deviation; GDS-SF, geriatric depression scale short form; NHP P, Nottingham health profile pain; NHP PA, physical activity; NHP EL, energy level; NHP S, sleep; NHP SI, social isolation; NHP ER, emotional reaction; NHP T, total score; WHOQOL SAB, World Health Organization quality of life instrument old module Turkish version sensory abilities; WHOQOL SOP, social participation; WHOQOL DAD, death and dying; WHOQOL INT, intimacy; WHOQOL AUT, autonomy; WHOQOL PPF, past, present, and future activities; WHOQOL T, overall score.

Table 5. Comparison of pre-test and post-test results of control group

Control group (n = 10)		Pre-test results	Post-test results		
		Mean ± SD	Mean ± SD	Z	P value
MMSE	Orientation	6.30 ± 1.16	5.10 ± 1.10	-2.5205	**.011**
	Recording memory	3.00 ± 0.00	3.00 ± 0.00	t: 0.000	.500
	Attention and calculation	2.80 ± 1.14	2.70 ± 1.34	-0.557	.295
	Recall	0.30 ± 0.68	0.20 ± 0.63	0.289	.773
	Language	7.40 ± 0.96	7.40 ± 1.17	-0.471	.637
	Total	19.80 ± 2.39	18.50 ± 3.10	-2.099	**.036**
GDS-SF		5.30 ± 3.47	6.60 ± 4.30	-2.032	**.042**
NHP P		28.49 ± 30.74	30.84 ± 23.24	-.405	.686
NHP ER		33.26 ± 32.96	35.82 ± 32.97	-1.352	.176
NHP S		16.99 ± 30.75	23.84 ± 30.39	-1.841	.066
NHP SI		29.90 ± 36.15	33.43 ± 32.98	-1.069	.285
NHP PA		37.99 ± 26.10	44.22 ± 24.33	-2.023	**.043**
NHP EL		88.00 ± 195.26	42.64 ± 38.24	-.368	.713
NHP T		68.75 ± 116.96	95.44 ± 122.50	-2.533	**.011**
WHOQOL SAB		10.80 ± 2.62	9.90 ± 2.42	-2.060	**.039**
WHOQOL AUT		12.50 ± 4.12	11.00 ± 3.20	-2.456	**.014**
WHOQOL PPF		13.70 ± 5.79	12.50 ± 5.380	-1.841	.066
WHOQOL SOP		14.20 ± 5.65	12.00 ± 4.35	-2.207	**.027**
WHOQOL DAD		9.20 ± 5.63	8.80 ± 4.98	-.755	.450
WHOQOL INT		16.10 ± 3.87	14.30 ± 3.09	-2.392	**.017**
WHOQOL T		76.50 ± 16.91	68.50 ± 13.98	-2.810	**.005**

Abbreviations: *Z,* Wilcoxon analysis; SD, standard deviation; GDS-SF, geriatric depression scale short form; NHP P, Nottingham health profile pain; NHP PA, physical activity; NHP EL, energy level; NHP S, sleep; NHP SI, social isolation; NHP ER, emotional reaction; NHP T, total score; WHOQOL SAB, World Health Organization quality of life instrument old module Turkish version sensory abilities; WHOQOL SOP, social participation; WHOQOL DAD, death and dying; WHOQOL INT, intimacy; WHOQOL AUT, autonomy; WHOQOL PPF, past, present, and future activities; WHOQOL T, overall score.

results, there was a significant decrease in the quality of life in the final assessment compared to the initial assessment ($P = .011$ and $P = .005$, respectively). In the control group, NHP sub-dimensions of physical activity, sensory abilities, autonomy, social participation, and intimacy sub-dimensions of WHOQOL were significantly worsened compared to the initial assessment ($P < .05$) (Table 5).

DISCUSSION

In our study, and as Swan et al have mentioned before as well, it has been observed that non-pharmacological treatment strategies can have an important place in patients with short-term therapy cycles.[28] Considering the results of previous studies,[17,18] in the current study, it has been observed that the use of one or more non-pharmacological treatment methods in AD patients has positive results in different areas (cognition, depression, sleep, quality of life, etc.). In the literature, the duration of this training extends from two weeks to two years and since similar positive results are obtained across these durations, it has been proved that the

duration does not make a difference in these non-pharmacological treatments. However, in many non-drug treatment studies, positive results were obtained with the twice-weekly application.[29,30] In this study, positive results were obtained in the therapy group with six-weeks and once-a-week sessions.

Our results are similar to studies that use more than one therapy technique together.[17,18] This may be because of the usage of multifaceted techniques to target the different areas that dementia can affect: recollection with a focus on emotion, music therapy for stimulation, and reality orientation cognitively. In the study of Onieva-Zafra et al, all three therapy approaches were used together and music-based therapy was given twice a week for eight weeks. They observed a decrease in the depression and anxiety levels of the patients after the therapy.[13] The depression results of our study are very similar to the results of this study. The common point of both studies is that three techniques were used in both. However, the other study was mostly music-based and no measurement was made for the MMSE change.

However, if we proceed from these results, it can be deduced that the use of three therapy techniques may have a positive effect on the level of depression in AD. The cognitive stimulation therapy applied in this study has also been shown to improve many aspects. However, this therapy technique is also applied twice a week for at least seven weeks.[31,32] In our study, similar results were obtained in a shorter time with holistic therapy. Due to the scarcity of trained and experienced clinicians in dementia, holistic therapy can be used as an alternative to cognitive stimulation therapy and can be provided ease of participation in therapy for patients from different provinces.

In the literature, reminiscence therapy in groups has been applied mostly to dementia patients and the effect of therapy on depression and/or quality of life has been examined, similar to our study.[33,34] In our study, one session of reminiscence therapy was performed every week; the session lasted approximately 30 minutes. In a study conducted by Chiang et al, the authors find an increase in communication and self-confidence and a decrease in loneliness after reminiscence therapy.[35] An increase in social participation and autonomy was observed in our study, similar to their study. Van Bogaert et al examine the effect of reminiscence therapy on mild to moderate AD and find that there is an improvement in the cognitive level of individuals at the end of reminiscence therapy, as in our study.[36] These two meta-analyses confirm that reminiscence therapy provided significant improvement in cognition in an individual with dementia. However, these meta-analyses have reported that the effects of reminiscence therapy are inconsistent in improving

depressive and behavioral symptoms.[30,37] In our study, there were significant positive effects not only in cognitive status but also in depression in individuals with AD.

Following the results of our study, we believe that the use of more than one therapy technique was effective. The use of music therapy may be the reason for these positive effects. It has been found that music therapy applications in individuals with AD reduces depression, irritability, abnormal motor activity, and sleep disorders and improve cognitive functions.[10,11] In a study conducted by Han et al, music therapy was administered twice a week for eight weeks, with 16 sessions in total. In their study, where the sessions lasted 50 minutes, they found positive changes in the participants' depression and activities of daily living.[11] In our study, music therapy was not the main body of therapy but a part of it; thus, the allocated time was kept short. Although 5–10 minutes were applied and different music was chosen each week, similar results were obtained with other studies, and we also observed an improvement in sleep and depression levels.

In this study, while there was no significant difference in the MMSE results before therapy between the therapy and control groups but there was a significant difference after therapy. There was an increase in cognitive level in the therapy group and a decrease in the control group. It has been seen in previous studies that all three therapy techniques applied have a positive effect on cognitive functions. In particular, reality orientation therapy is effective in improving cognitive functioning in individuals with dementia.[1] A meta-analysis confirmed that reality orientation therapy significantly improves cognitive functions and behavioral problems in elderly people with dementia.[38] Camargo et al applied reality orientation therapy to individuals with AD for six months. As a result of their studies, they state that reality orientation is a valuable and long-term complementary intervention for the cognitive status of individuals with AD.[22] However, although cognitive development was observed in the therapy group in our study, the long-term effect of holistic therapy was not evaluated.

When the increase in MMSE scores as an average of 3 points in a short period of six weeks was examined, it was seen that the increase in orientation scores of the patients was observed. Similarly, it was determined that the main reason for the decrease in the MMSE scores in the control group was the orientation part. In the control group, the mean decrease of 1 point made us think that the progression of the patients in this group was rapid at the beginning.[39] However, the fact that one case in the control group had an acute infection in the last evaluation period and his score decreased by 5 points had a great effect on this result. This may be a reason for the regression seen in the control group over six weeks.

All participants came to therapy regularly and voluntarily for six weeks. The individuals in the therapy group became close friends and stated that they were happy during the sessions. Some participants said that they wanted to continue therapy despite the end of the session. These thoughts of the subjects in the therapy group were reflected in the NHP and WHOQOL results.

The most important feature that distinguishes this study from other studies is the examination of the effect of therapy on different sub-branches of quality of life. In this study, it was observed that there was a significant increase in the quality of life in the therapy group according to the NHP T and WHOQOL T results. According to NHP, there was a significant positive change in energy level, sleep, social isolation, and emotional reaction. When the results were compared between the educated and uneducated groups, only emotional reaction (NHP ER) had worse results in the educated therapy group. One of the reasons for this situation may be that educated people experience more emotional sensitivity and loneliness and their awareness is higher.

However, the absence of difference before and after for all other conditions made us think that the educational status did not change the therapy results. In the therapy group, after therapy, there was a significant positive change in social participation, death and dying, intimacy, autonomy, and past, present, and future activities according to the WHOQOL. The large number of sub-dimensions with positive change could be due to the simultaneous use of three different therapy techniques (reminiscence, music, and reality orientation therapy) because a therapy technique may have benefited an area where no significant change was observed in another therapy technique. In addition, cognitive status, depression, and WHOQOL sub-areas (autonomy, social participation, and intimacy) significantly worsened in the control group but increased in the therapy group. These findings may be the result of the failure of pharmacological treatment alone to prevent disease progression. These results lead us to believe that holistic therapy may have more effects, especially in these areas because it was seen that the areas with the highest deterioration in the control group were the areas that prevent deterioration with therapy and even showed improvement.

However, there was no significant change in pain and physical activity from NHP quality of life sub-domains in the therapy group. One reason for this result may be that physical activity, such as aerobic exercise, was not included in the holistic therapy used. In addition, there was a significant decrease in the control group, especially in the physical activity part of the NHP, compared to the first evaluation. Therefore, the patients' quality of life can be increased even more by including simple physical activities that we did not include in our study.[40,41]

Most studies looking at the effectiveness of therapy in individuals with dementia have been conducted with a total of 15–32 people, including the therapy and control groups.[1,28,42,43] Our study was conducted with 20 participants with AD. Although this sample group is comparable with the literature, we think it constitutes our study's main limitation. It can be difficult to generalize the effectiveness of holistic therapy because it is applied to a limited number of people. However, the results are promising in neurodegenerative diseases such as AD. Another limitation of the study is the achievement of these findings in the acute period after therapy. It is not known whether positive developments are maintained three or six

months after therapy. As in other studies, the lack of long-term follow-up is one of the general limitations of our study as well.[42] In addition, the opinions of the participants about therapy were not considered in our study. Qualitative assessments, such as a survey focusing on the views of individuals with AD about therapy, could also be undertaken in future research.

CONCLUSION

In this study, the effects of holistic therapy on cognition, depression, quality of life, and different dimensions of quality of life in individuals with AD were examined by applying music, reminiscence, and reality orientation therapy once a week together. A significant improvement was observed in the therapy group in cognition, depression level, and quality of life, especially in sleep, social isolation, emotional reaction, energy, autonomy, intimacy, fear of death, and emotional ability areas. In the control group, which received only pharmacological treatment, a statistically significant decrease was observed in the quality of life, depression, and cognitive levels. Therefore, non-pharmacological treatment, such as holistic therapy, can be used together with pharmacological treatment in people with AD. Holistic therapy can preserve and/or improve cognitive status, decrease depression, and improve quality of life in individuals with mild to moderate AD. Regardless of the educational status of the patients, holistic therapy can improve their emotional status, social participation, autonomy, and sensory functions. In addition, with holistic therapy, a decrease in the fear of death and an increase in intimacy bonds can be observed in individuals with AD.

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