Turkish Journal of Geriatrics
DOI: 10.31086/tjgeri.2020.127
2019;22 (4):482-493

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RESEARCH

ASSESSMENT OF THE IMPACT OF DEMENTIA CARE AND SUPPORT PROGRAM IN BOTH PATIENT AND CAREGIVER OUTCOMES: AN INTERVENTION STUDY

ABSTRACT

Introduction: Dementia is one of the priority issues among the public health concerns. This study aims to assess the impact of the Dementia Care and Support Program in caregivers and patients with dementia.

Materials and Methods: This study is an intervention study. Dementia Care and Support Program was a planned 16-week program. Sixty-one patient–caregiver pairs were randomized into two groups, the intervention (n=31) and control groups (n=30). Dementia Care and Support Program was applied to the intervention group, but the control group received routine hospital care. Data were collected between July and November 2016 from a dementia outpatient clinic. While data for patients were collected using the quality-of-life assessment in Alzheimer's disease and Neuropsychiatric Inventory, data for caregivers were collected using the quality of life SF-36, Beck Depression, Beck Anxiety, and Zarit Caregiver Burden Care Inventory.

Results: Fifty-four patient–caregiver pairs completed the study. The mean age of the patients was 76.7±11.2 (46–96) years old. There was no statistically significant difference in the quality-of-life scores and neuropsychiatric symptom scores between the patient groups ($p>0.05$). The mean age of caregivers was 53.6±14.8 (22–81) years old. Statistically significant differences were found in NPI-D, quality-of-life mental health, quality-of-life physical health, depression, and anxiety scores between the caregiver groups ($p<0.05$), but there was no statistically significant difference in burden scores ($p>0.05$).

Conclusion: This study established that Dementia Care and Support Program has positive effects on caregivers.

Keywords: Dementia; Patient; Caregiver; Quality of Life; Depression.

ARAŞTIRMA

DEMANS BAKIM VE DESTEK PROGRAMININ HASTA VE BAKIM VERİCİ ÇIKTILARI ÜZERİNDEKİ ETKİSİNİN DEĞERLENDİRİLMESİ: BİR MÜDAHALE ÇALIŞMASI

ÖZ

Giriş: Demans halk sağlığı sorunları arasında öncelikli bir konudur. Bu çalışmanın amacı demanslı hastaların bakım vericilerine uygulanan Demans Bakım ve Destek Programı'nın etkisini değerlendirmekti.

Gereç ve Yöntem: Bu çalışma 16 haftalık bir müdahale çalışmasıdır. Çalışmada 61 hasta-bakım verici çifti iki gruba randomize edildi. Girişim grubu 31, kontrol grubu 30 kişiden oluştu. Girişim grubuna Demans Bakım ve Destek Programı uygulanırken, kontrol grubuna rutin hastane bakımı verildi. Veriler Demans polikliniğinde 2016 Temmuz-2016 Kasım tarihleri arsında toplandı. Veri toplamada hastalar için Alzheimer Hastalığı Yaşam Kalitesi Ölçeği ve Nöropsikiyatrik Envanter kullanılırken; bakım vericiler için Yaşam Kalitesi SF 36 Ölçeği, Beck Depresyon Ölçeği, Beck Anksiyete Ölçeği, Zarit Bakım Yükü Ölçeği kullanıldı.

Bulgular: Çalışma 54 bakım verici-hasta çifti ile sonlandırıldı. Hastaların yaş ortalaması 76.7±11.2 (46-96) idi. Hastaların yaşam kalitesi puanlarında ve nöropsikiyatrik semptom ciddiyeti (NPI-S) puanlarında gruplar arasında istatistiksel olarak anlamlı bir fark bulunmadı ($p>0.05$). Bakım vericilerin yaş ortalaması ise 53.6±14.8 (22-81) idi. Bakım vericilerin distress (NPI-D) puanlarında, yaşam kalitesi puanlarında, depresyon ve anksiyete puanlarında gruplar arasında istatistiksel olarak anlamlı fark bulundu ($p<0.05$). Fakat, bakım verici yükünde gruplar arasında istatistiksel olarak anlamlı bir fark bulunmadı ($p> 0.05$).

Sonuç: Bu çalışma, Demans Bakım ve Destek Programı'nın demans hastalarının bakım vericileri üzerinde olumlu etkisi olduğunu ortaya koymaktadır.

Anahtar Sözcükler: Demans; Hasta; Bakım Verici; Yaşam Kalitesi; Depresyon.

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Received: 26/07/2019
Accepted: 30/08/2019

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INTRODUCTION

Dementia is a rapidly growing global public health problem. Approximately 50 million people have dementia worldwide, and most of them live in low- and middle-income countries. Nearly 10 million new cases are discovered annually (1). Dementia rises exponentially during old age; it is one of the leading causes of disability and dependency among the elderly (2). Dementia is often seriously devastating for both patient and caregiver or family. Family caregivers who are informal caregivers experience burden, depression, anxiety, health-related problems, and financial difficulties (1,2).

Dementia care aims to preserve patients' functioning, decrease disability, regulate the environment and relationships to sustain stability, and maintain personality and quality of life (3). Nurses are accountable for providing education, information, and support to caregivers during all stages, which is the first and fundamental step among the non-pharmacological approaches (3, 4). Based on evidences, public health nursing practices in dementia care aim to maintain quality results despite differences in patient care outcomes, standardized care, and enhanced nurse satisfaction (5).

The program used in this research was Dementia Care and Support Program (DCSP), which was developed by the authors from the literature review (6, 7). This was a multicomponent psychosocial intervention. The psychosocial intervention for family and/or informal caregiver attempts to increase knowledge (education), improve skills and coping strategies, and provide support (7). In the recent years, several authors have assessed the efficacy of interventions for both caregivers and dementia patient, but they have found considerable variability in the outcome. The DCSP consists of both individual (telephone interviews and home visits) and group support intervention (group training, face-to-face group meeting, WhatsApp group interviews). When the literature was examined, only two nursing researches (8, 9) were found in Turkey. This situation has increased the interest in conducting research about the subject. This study aims to provide evidence for the impact of multicomponent and multidisciplinary interventions on both patient and caregiver outcomes.

MATERIALS AND METHOD

Study design

This study is intervention study.

Participants

This study was conducted at Manisa Celal Bayar University (MCBU) Hafsa Sultan Hospital Dementia Outpatient Clinic in Manisa, between July and November 2016. The study universe comprised clinic-registered patients (N = 396) and their caregivers (family caregivers). We computed the sample size with power analysis, statistically based on the work of Martin-Corasso et al. (10). The power analysis for this study, at 99% power and 0.01 error level, was therefore determined that 38 patient–caregiver pairs (19 patient–caregiver pairs in each group) were required. Considering loss of subjects over time, we initiated the study with 61 patient–caregiver pairs. The study sample was selected by probabilistic sampling among patient–caregiver pairs that fulfilled the inclusion criteria.

The inclusion criteria for patients were as follows: clinical diagnosis of dementia; living in Manisa; not leaving Manisa during the study period and willing to participate in the research. The exclusion criterion was diagnosis with cancer. We enrolled caregivers based on the following criteria: aged ⍰18 years; living in Manisa; not leaving Manisa during the study period and willing to participate in the research.

Randomisation criteria were dementia type, dementia stage and caregivers' education level. We stratified the patients and caregivers based on the education status of caregivers, considering the randomisation criteria. Using simple random placement method, we determined groups of caregivers to be assigned to the groups. The patient–caregiver pairs were assigned to the randomised IG (n = 30) and CG (n = 31). We evaluated the homogeneity of randomisation using the x^2 test. Figure 1 shows the study flowchart.

Procedures

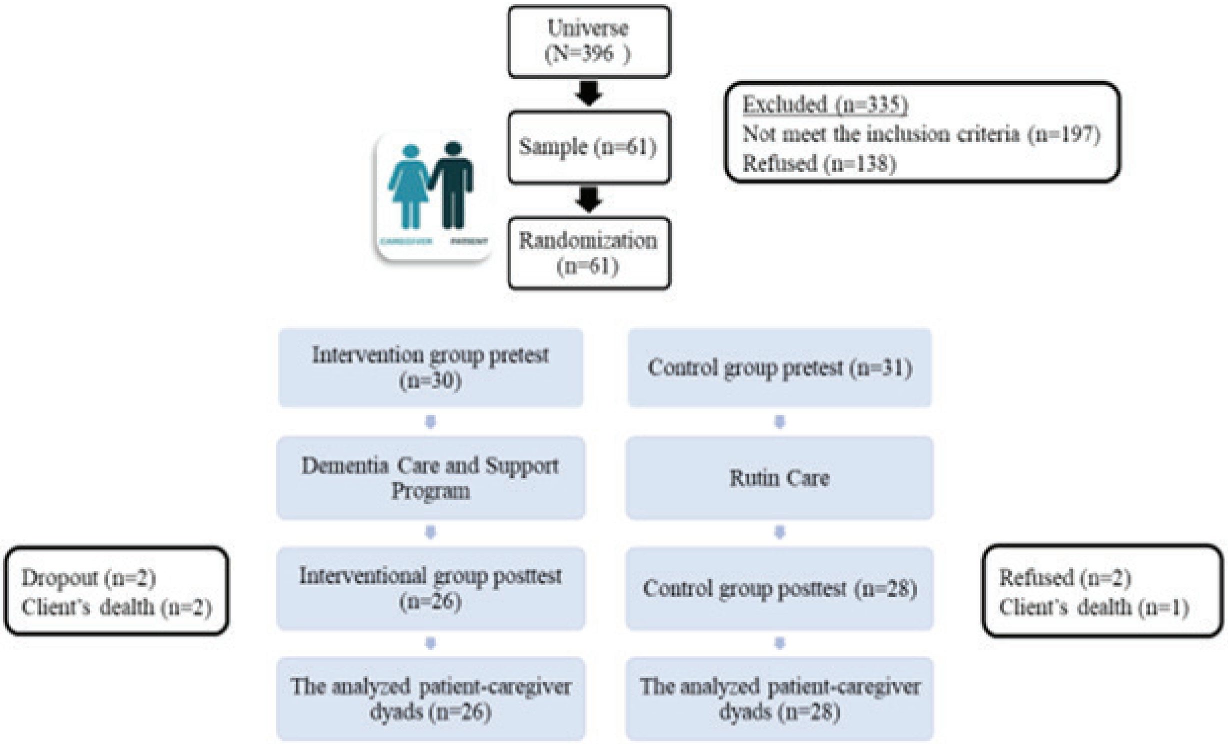
The programme with multi-component interventions was given by a multi-disciplinary team (nurse, neurologist, psychologist). Dementia type and its stages were diagnosed by a neurologist.

Intervention group

The group received group training and support, home visits and individual support through telephonic interviews. Caregivers were unable to attend group training when they could not find anyone to leave their patients. This handicap was tried to be overcome with the WhatsApp group and house visits. WhatsApp group was set up to make caregivers communicate and interact with each other and researchers. During 16 weeks, caregivers were interviewed routinely per month; four face-to-face interviews were conducted with each patient–caregiver dyad.

After pre-test, intervention group was trained with a structured standard training package

Figure 1. Flowchart of the Research.



(Fig. 2); the training comprised videos, oral presentation, question–answer sessions. Training programme created by the researchers and the study plan were explained to the caregivers in writing. In some training sessions, psychologist at the dementia clinic played a supporting role (stress management and problem-solving methods). Furthermore, caregivers provided support for individual problems.

Control group

We interviewed the CG (n = 31) two times during the data collection process. The group received just routine hospital care. At the end of 16 weeks, the programme was provided to this group too.

Data collection

Caregiver and Patient Information Form: The form prepared by referring to the literature (10, 11). was comprised of two sections. Firstly section was about patients' age, sex, education level, marital status, dementia type and stage, comorbidity etc. Secondly section was about caregivers' age, sex, education level, marital status, income status, relationship with patients etc.

Patients Quality-of-life in Alzheimer's Disease (QoL-AD): The scale developed by Longsdon et al. (1999) was filled and assessed separately for patients and caregivers. The scale measures quality of life of Alzheimer's patients. The scale comprises 13 items of the Likert type, and quality of life increases as the score increases. Akpınar &Küçükgüçlü (2012) assessed the Turkish reliability and validity of the and Cronbach's α to be 0.84 (12). In this study, Cronbach's α was 0.84.

Neuropsychiatric Inventory (NPI): This assesses the frequency and severity of psychological and behavioural symptoms of dementia and is based on interviews with caregivers. It comprises two parts as follows: (a) measures the severity of associated problem behaviours on a scale of 1–3 (NPI-S) and (b) measures the perceived distress of problem behaviours by caregivers on a scale of 0–5 (NPI-D). Akça-Kalem et al. (2005) evaluated Cronbach's $\alpha$of the inventory to be 0.79. For specific items of the frequency and severity, Cronbach's α varies between 0.76 and 0.79, respectively (13). In this study, Cronbach's α of the inventory was 0.91, and for specific items of the frequency and severity Cronbach's α values were 0.73 and 0.77.

Caregivers

Quality of Life Scale SF36 comprises eight sub-dimensions and defines two summary areas: mental health and physical health. The total score can be 0–100. Koçyiğit et al. (1999) assessed the Turkish reliability and validity of the scale. Cronbach's α of the scale was 0.73–0.76 for sub-dimensions of the scale (14); in this study, it was 0.73–0.88.

The Beck Depression Inventory (BDI) was developed by Beck et al. (1961) and enables the assessment of both depressive symptoms and cognitive content. The total score can be 0–63 points. Hisli (1989) assessed the Turkish validity and reliability. The total score can be 0–63 points. Cronbach's α was 0.80 (15); in this study, it was 0.80.

Beck Anxiety Inventory (BAI) is a 21-item Likert-type scale, developed by Beck et al. (1988), to determine the frequency of anxiety symptoms of individuals. The severity of anxiety increases as the total score of the scale increases. The total score can be 0–63 points. Ulusoy (1998) established the Turkish validity and reliability of the scale. Cronbach's α of the scale was 0.93 (16); in this study, it was 0.87.

Zarit Burden Interview (ZBI) the most widely used in caregiver burden. It encompasses the physical, emotional and financial burden as perceived by the caregiver. It asks 22 questions that are rated on a five-point scale (0 = not at all to 4 = nearly always). Cronbach's α for the validity luck study of the scale was 0.95 (17); in this study, it was 0.91.

Statistical analysis

Statistical analyses were performed using the SPSS 15.0 software package. We evaluated descriptive characteristics using numbers and percentages and binary comparisons using the x^2 test. We considered the statistical significance at 0.05. Data of the normal distribution are presented by the number of sample size and Shapiro–Wilk values. Furthermore, non-parametric tests were used to analyse non-normally distributed variables.

Ethics

The study was approved by the MCBU Medicine Faculty Local Ethics Board (dated 9 December 2015; No: 20478486-412), MCBU Hafsa Sultan Hospital. We obtained written informed consent from all caregivers and some of the patients through the Volunteer Form.

RESULTS

We assessed the research findings in two parts – patients' and caregivers' results.

Patients' results

The mean age of the patients was 76.7 ± 11.2 (46–96) years old. We observed no statistically significant differences between the groups for all demographic characteristics ($p > 0.05$), except for marital status ($p < 0.05$; Table 1).

Table 1. Socio-demographic and descriptive characteristics of patients (n = 61)

Variable		**Intervention Group (n = 30)**	**Control Group (n = 31)**	**X^2 test***
		n (%)	**n (%)**	**X^2 ,p**
Age	≤76 years	9 (40.9)	13 (59.1)	$x^2 = 0.942$ $p = 0.332$
	>76 years	21 (53.8)	18 (46.2)	
Sex	Female	23 (52.3)	21 (47.7)	$x^2 = 0.604$ $p = 0.437$
	Male	7 (41.2)	10 (58.8)	
Education Level	Illiterate	8 (66.7)	4 (33.3)	$x^2 = 8.019$ $p = 0.155$
	Literate	3 (25.0)	9 (75.0)	
	Primary School	15 (62.5)	9 (37.5)	
	Middle School	1 (25.0)	3 (75.0)	
	High School	2 (40.0)	3 (60.0)	
	University	1 (25.0)	3 (75.0)	
Marital Status	Married	10 (30.3)	23 (69.7)	$x^2 = 10.250$ $p = 0.001$
	Single	20 (71.4)	8 (28.6)	

Variable		**Intervention Group (n = 30)**	**Control Group (n = 31)**	**X^2 test***
		n (%)	**n (%)**	**X^2, p**
Dementi Type[a]	Alzheimer's Disease	23 (46.0)	27 (54.0)	$x^2 = 2.104$ $p = 0.717$
	Typea	1 (50.0)	1 (50.0)	
	Dementia with Lewy Bodies	1 (50.0)	1 (50.0)	
	Mixed Dementia	1 (50.0)	1 (50.0)	
	Parkinson's Disease Dementia	4 (80.0)	1 (80.0)	
Dementia Stage[a]	Very Mild (0.5)	2 (50.0)	2 (50.0)	$x^2 = 3.710$ $p = 0.295$
	Dementia Stagea	11 (47.8)	12 (52.2)	
	Moderate (2)	12 (66.7)	6 (33.3)	
	Severe (3)	5 (33.3)	10 (66.7)	
Comorbidity	Yes	21 (47.7)	23 (52.3)	$x^2 = 0.133$ $P = 0.715$
	Comorbidity	9 (52.9)	8 (47.1)	

Abbereviations: *x^2 test; a Randomisation criteria.

There was no statistically significant difference in quality-of-life scores and neuropsychiatric symptom scores between the groups ($p > 0.05$; Table 2).

Caregivers' results

The mean age of caregivers was 53.6 ± 14.8 (22–81) years old. No significant differences were observed between the groups for all demographic characteristics ($p > 0.05$; Table 3).

The results of the present study demonstrate that there was statistically significant differences in NPI-D, quality-of-life (both mental and physical health), depression, and anxiety scores between the groups ($p < 0.05$), but there was no statistically significant difference in burden scores ($p > 0.05$; Table 4).

DISCUSSION

Caregivers have critical roles, needs, and difficulties; however, inadequate information about the care provided by the caregivers increases problems for patients as well as caregivers. With the use of structured sessions and information and psychological support investigation, one of the hopes of the 16-week intervention program was to determine whether intervention could affect the outcomes for both caregivers and dementia patients.

Table 2. Dependent variable scores at pre-test–post-test measures of patients with dementia (n = 61).

		Intervention Group		**Control Group**		**Between groups****
		n	**x ± SD (Min; Max)**	**n**	**x ± SD (Min; Max)**	
QoL-ADa	Pre-test	22	31.18 ± 6.14 (22; 42)	20	33.29 ± 4.96 (22; 44)	z = −2.054; p = 0.400
	Post-test	17	31.79 ± 5.41 (22;39)	17	32.39 ± 4.33 (22; 39)	z = −0.328; p = 0.743
NPI-S	Pre-test	30	31.18 ± 23.79 (0; 87)	31	19.41 ± 16.09 (0; 52)	z = −0.845; p = 0.398
	Post-test	26	26.50 ± 21.99 (0; 77)	28	30.70 ± 23.78 (8; 88)	z = −1.013; p = 0.311

Abbereviations: *Mann–Whitney U-test.; **Wilcoxon marked rank test.; a Calculated solely for Alzheimer's disease; QoL-AD, Quality of life in Alzheimer's Disease; NPI-S, Neuropsychiatric Inventory –Severity.

Table 3. Socio-demographic and descriptive characteristics of caregivers (n = 61).

Variable		**Intervention Group (n = 30)**	**Control Group (n = 31)**	**X^2 test***
		n (%)	**n (%)**	**X^2 ,p**
Age	53 years	18 (58.1)	13 (41.9)	$x^2 = 1.991$; p = 0.158
	>53 years	12 (40.0)	18 (60.0)	
Gender	Female	25 (52.1)	23 (47.9)	$x^2 = 0.759$; p = 0.384
	Male	5 (38.5)	8 (61.5)	
Education Level	Illiterate	-(-)	1 (100.0)	$x^2 = 0.984$; p = 0.964
	Literate	2 (50.0)	2 (50.0)	
	Primary School	10 (50.0)	10 (50.0)	
	Middle School	3 (50.0)	3 (50.0)	
	High School	9 (50.0)	9 (50.0)	
	University	6 (50.0)	6 (50.0)	
Marital Status	Married	23 (50.0)	23 (50.0)	$x^2 = 0.050$; p = 0.823
	Single	7 (46.7)	8 (53.3)	
Income Status	Low Income	4 (30.8)	9 (69.2)	$x^2 = 2.689$; p = 0.261
	Middle Income	24 (55.8)	19 (44.2)	
	High Income	2 (40.0)	3 (60.0)	

Variable		Intervention Group (n = 30)	Control Group (n = 31)	X^2 test*
		n (%)	n (%)	X^2,p
Relationship with Patients	Spouse	4 (25.0)	12 (75.0)	x^2 = 10.211; p = 0.069
	Child	19 (63.3)	11 (36.7)	
	Daughter-in-law	6 (54.5)	5 (45.5)	
	Sibling	1 (100.0)	-(-)	
	Parents	-(-)	1 (100.0)	
	Other	-(-)	2 (100.0)	

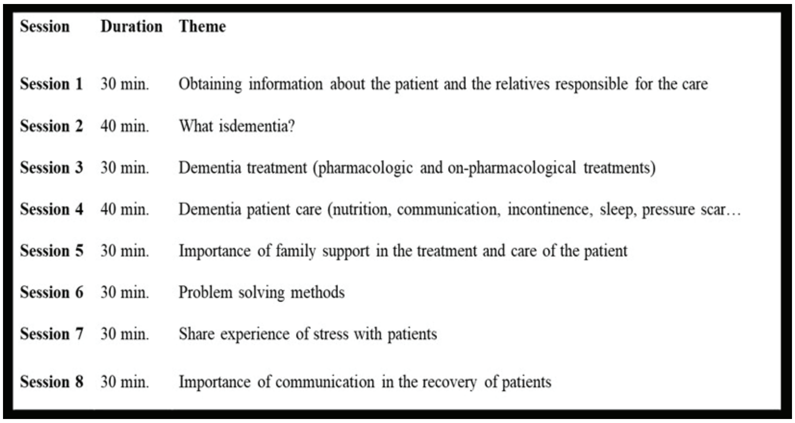
Abbereviations: *x^2 test; a Randomisation criteria.

Table 4. Dependent variable scores at pre-test–post-test measures of caregivers (n = 61).

		Intervention Group		Control Group		Between groups**
		n	x ± SD (Min; Max)	n	x ± SD (Min; Max)	
SF 36 (physical health)	Pre-test	30	41.75 ± 10.00 (26; 52)	31	41.59 ± 9.78 (25; 61)	z = 0.447; p = 0.655
	Post-test	26	45.41 ± 7.94 (30; 57)	28	37.74 ± 10.77 (22; 55)	z = 2.372; p = 0.018
SF36 (mental health)	Pre-test	30	41.79 ± 9.024 (17; 55)	31	42.18 ± 10.52 (24; 57)	z = 0.0.736; p = 0.462
	Post-test	26	44.87 ± 8.94 (21; 60)	28	39.47 ± 9.39 (27; 57)	z = 2.701; p = 0.007
BDI	Pre-test	30	11.62 ± 8.34 (1; 35)	31	15.23 ± 7.70 (3; 26)	z = 1.525; p = 0.127
	Post-test	26	9.68 ± 8.45 (0; 35)	28	20.64 ± 8.94 (5; 39)	z = 3.268; p = 0.001
BAI	Pre-test	30	10.06 ± 8.89 (0; 30)	31	12.23 ± 8.05 (1; 30)	z = 0.043; p = 0.965
	Post-test	26	6.18 ± 7.26 (0; 29)	28	15.47 ± 9.28 (1; 34)	z = 2.636; p = 0.008
NPI-D	Pre-test	30	11.87 ± 9.73 (0; 32)	31	9.35 ± 8.06 (0; 27)	z = −0.296; p = 0.767
	Post-test	26	10.50 ± 8.70 (0; 27)	28	14.64 ± 10.06 (3; 38)	z = −1.968; p = 0.049
ZBI	Pre-test	30	31.43 ± 18.18 (5; 74)	31	40.17 ± 18.10 (13; 65)	z = 0.599; p = 0.549
		26	27.87 ± 18.39 (5; 63)	28	40.70 ± 17.66 (10; 70)	z = 1.351; p = 0.177

Abbreviations: *Mann–Whitney U-test; **Wilcoxon marked rank test, SF 36, Quality of Life Scale SF36; BDI, Beck Depression Inventory; BAI, Beck Anxiety Inventory; NPI-D, Neuropsychiatric Inventory-Distress, ZBI; Zarit Burden Interview..

Figure 2. The Dementia Care and Support Programme's structured standard training package.



Session	Duration	Theme
Session 1	30 min.	Obtaining information about the patient and the relatives responsible for the care
Session 2	40 min.	What isdementia?
Session 3	30 min.	Dementia treatment (pharmacologic and on-pharmacological treatments)
Session 4	40 min.	Dementia patient care (nutrition, communication, incontinence, sleep, pressure scar…
Session 5	30 min.	Importance of family support in the treatment and care of the patient
Session 6	30 min.	Problem solving methods
Session 7	30 min.	Share experience of stress with patients
Session 8	30 min.	Importance of communication in the recovery of patients

Patients

The quality of life is an essential parameter in terms of the progression of dementia. Thus, quality-of-life assessment is imperative in planning the care given to the patients. In this study, there was no statistically significant difference in the quality of life between the groups. In the literature, studies on the quality of life of dementia patients are limited. Soylemez et al. conducted an intervention study with a 6-month period while Koivisto et al. made a 3-year follow-up (8, 18). In both studies, no statistically significant difference between the groups in the quality of life (8, 18) was observed. Our findings on the quality of life may be due to the patients' lack of insight and cognitive deficits.

In our study, the intervention provided no beneficial effects on patients' NPI-S score. An 18-month follow-up study provided beneficial results on NPI (11). Our findings are consistent studies both with short intervention period (8, 19) and with long intervention period (18). The findings of some studies and our study (8, 18) supported the idea that neuropsychiatric problems are associated with lower quality of life in patients.

Caregivers

We observed a marked difference between the groups in the post-test on both areas of the caregivers' quality-of-life scores. These findings are consistent with some studies when the psychosocial intervention was applied (10, 11). This finding reinforces that modifying the intervention according to the caregiver's needs may result to a successful outcome.

Reportedly, caregivers of patients with dementia are hidden victims who experience mental and physical health-related problems that hinder their ability to cope with stress effectively (20). In this study, the DCSP has a positive effect on depression in the intervention group. This finding is consistent with the study of Kuo et al. (21) while not consistent with the study of Söylemez et al. (8). Our positive findings may have been due to the efficacy of the multicomponent intervention (group training and support, home visits, and individual support through telephone interviews).

This study shows that psychosocial interventions may also decrease the anxiety of caregivers. Akkerman and Ostwald reported that caregivers exhibited a considerable reduction in anxiety scores (22). Santos et al. emphasized the impact of participating in psychosocial interviews, support groups, and education in decreasing the adverse impact of caregiving (23). This result may have been due to the efficacy of having an individual consultant and support through telephone interviews. Outside of the initiative program, caregivers were able to reach out to the researcher when they needed it.

In this study, significant difference was observed between the groups' NPI-D post-test scores. Reportedly, neuropsychiatric problems are associated with depression symptoms and caregivers' burden (23). Consistent with Dias's findings, the psychosocial intervention positively affected the caregiver distress (19). Our results suggest that providing education and counseling to caregivers decrease their distress.

Upon evaluating the caregivers' burden scores, we did not observe a marked difference between the groups. These findings were consistent with the findings of some previous studies (23, 24). Martin-Corasso et al. continued intervention for 10 months and showed better burden results (10). Caregiver burden encompasses the physical and psychological well-being, social life, and financial status. In this study, it was thought that this resulted to caregivers' physical and psychological well-being and social life positive progress. However, the lack of intervention in the financial dimension of the burden of care in the study may be the reason for no difference between the groups.

The factor that differentiates this research from other studies in the literature and provides a positive effect on many aspects of the research may be related to the fact that the program applied to caregivers is supported not only by the group trainings given in the hospital but also by the home visits and telephone conversations provided outside of the clinical setting as well as by having a multidisciplinary team.

This study has several limitations. First, no scale was used to determine the patient's quality of life for the different types of dementia, and data were collected by the scale used only on patients with Alzheimer's disease. Second, the study duration and recurrence measurements were limited. There could be an improvement in most outcomes as the post-test was performed immediately after the 16-week trial. Thus, had the study period been extended, the results could have been different. Finally, some caregivers could not attend the group training because they could not leave their patients alone at home. This resulted in higher home visits and telephone interactions than planned; this intervention also limited the interaction of caregivers with each other.

In conclusion; this study reveals that multicomponent and multidisciplinary interventions, education, and counseling programs have positive impact on caregivers' distress, quality of life, depression, and anxiety. We think that the results of the patients' quality of life and neuropsychiatric symptom severity are clinically but not statistically significant. This is a positive development for a disease without cure. In addition, regular home visits could potentially improve patients' and caregivers' outcomes. Thus, this study recommends using the program for nurses working with dementia patients and their caregivers. Regular and interdisciplinary training and counseling programs should be organized for caregivers, and their efficacy should be assessed. Furthermore, this study highlights the need to add dementia care education to the curriculum for nurses, based on the application of the program to home healthcare providers. Overall, the use of this program for regular home visits by nurses working in primary care units is recommended.

ACKNOWLEDGMENTS

The investigators would like to thank Asst. Prof. Dr. Aynur ÇETİNKAYA, Assoc. Prof. Dr. Hakan BAYDUR, Prof. Dr. Özlem KÜÇÜKGÜÇLÜ for their support, encouragement and participation in this project and their support in branches of the Turkey Alzheimer's Association and also the patients and their caregivers for participating in the study.

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