

ORIGINAL ARTICLE

Effects of Productive Activities with Reminiscence in Occupational Therapy for People with Dementia: A Pilot Randomized Controlled Study[☆]



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Summary *Objective/Background:* Although a number of studies have considered the effects of reminiscence therapy, none have examined whether a therapy that combines reminiscence with productive activity has a beneficial effect on elderly dementia patients. This study tests our hypothesis that productive activities with reminiscence in occupational therapy (PAROT) can alleviate depressive symptoms and improve task performance of elderly dementia patients. *Methods:* Thirty-six patients with dementia were randomly divided into two groups, namely, an intervention group ($n = 17$) and a control group ($n = 19$). The intervention group had six activity sessions (making rice balls and cakes; one session/week) while reminiscing about the activity. Measurements were performed using the Cornell Scale for Depression in Dementia (CSDD), Multi-dimensional Observation Scale for Elderly Subjects (MOSES), Vitality Index, and Mini-Mental State Examination (MMSE). The performance of the patients was assessed based on photographs of the products after the first and sixth sessions.

Results: Six patients dropped out while the study was in progress, thus leaving 15 patients in the intervention group and 15 patients in the control group. The scores of depression symptoms in CSDD and MOSES were significantly improved for the intervention group, while within-group comparison showed no significant differences in CSDD, MOSES, or MMSE total scores. In terms of task performance, 88% of the patients in the intervention group, including two patients with severe dementia, showed significant improvement in making the product.

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Conclusion: Our study suggests that PAROT may alleviate depressive symptoms and improve the task performance of elderly people with dementia.

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Introduction

Symptoms of depression are commonly observed in older adults with dementia (Bierman, Comijs, Jonker, & Beekman, 2007; Tsuno & Homma, 2009). For example, Gottfries (2001) has estimated that 50% of patients with dementia exhibit symptoms of depression. Gitlin et al. (2009) have observed that pharmacological approaches are not very effective for treating the depressive symptoms associated with dementia, and that nonpharmacological interventions are far more important. Besides depressive symptoms, older adults with dementia also exhibit diminished performance (Cidboy, 2004; Tarawneh & Holtzman, 2012).

After surveying the literature on the efficacy of acetylcholine inhibitor in treating patients with Alzheimer's disease (AD), Birks (2012) concluded that none of these treatment effects were larger. Thus, it is anticipated that, in addition to drug treatments, development of non-pharmacological therapies holds promise for mitigating the effects of dementia.

Reminiscence therapy is one such nonpharmacological approach for helping older people with dementia. Reminiscence therapy is a care system that essentially involves receptiveness and empathy in listening to the past experiences and memories of the elderly patients (Tadaka & Kanagawa, 2004; Woods, Spector, Jones, Orrell, & Davies, 2005). Meta-analysis of controlled reminiscence trials suggests that reminiscence may have beneficial effects on happiness and depression among the elderly patients (Chin, 2007). Wang (2007) conducted a randomized controlled trial, and found reminiscence therapy to be effective at relieving depressive symptoms and improving cognitive function in older people with dementia. Tadaka and Kanagawa (2007) conducted randomized controlled trials on elderly patients suffering from AD or vascular dementia (VD), and reported that reminiscence therapy had a beneficial effect on elderly dementia patients who were withdrawn. Most of these studies dealt with elderly patients suffering from having mild to moderate dementia.

Music and various other types of stimulation have recently been used to support reminiscence therapy, but verbal stimulus remains the primary method of arousing reminiscence in dementia patients (Ito, Meguro, Akanuma, Ishii, & Mori, 2007). Routine actions or tasks mastered in the past are better and longer retained as procedural memory by people with dementia (Van Halteren-van Tilborg, Scherder, & Hulstijn, 2007). Some sort of task-oriented intervention that exploits procedural memory learned in the past may hold the key to opening up and reinforcing reminiscence. Intervention that links physical activity with reminiscence is called activity reminiscence therapy (Yamagami, Oosawa, Ito, & Yamaguchi, 2007). In such interventions, some sort of tool from the past is presented that is related to a reminiscence theme.

Participants who are familiar with the tool demonstrate how the tool is used for the other participants and the staff, and reminisce about the activity (Kijima, 2002). However, to our knowledge, this is the first study in which patients actually engaged in a familiar activity from the past, created a product through the activity, used the created product, and reminisced about the activity. We developed a new intervention that combines productive activities and reminiscence (Table 1).

This study explores the effects of productive activities with reminiscence in occupational therapy (PAROT) on depressive symptoms, task performance (Darragh, Sample, & Fisher, 1998; Shumway-Cook et al., 2007), and the cognitive functioning of the elderly patients with mild to severe dementia.

Methods

Design

This is a pilot randomized controlled study conducted at long-term care facilities in Japan. An intervention group and a control group were selected from among patients at the facilities. The study was carried out over a 2-year period from September 2007 to November 2009.

Table 1 Productive Activities with Reminiscence in Occupational Therapy Versus Activity Reminiscence Therapy.

	PAROT (This study)	ART (Kijima, 2002)
Products	Yes	No
Activity		
Participants	All	All
Doing	Actually doing	Demonstrating how to use it
Having a goal	Making products	—
Reminiscence		
Participants	All	All
Topics	Relevant to activity	Relevant to activity
Consuming the products	Yes	No
Communication	Nonverbal > verbal	Verbal > nonverbal
Size of group	Less than 10 patients	Less than 10 patients
Number of therapists	Two to three OTs	Unspecified

ART = activity reminiscence therapy; OTs = occupational therapists; PAROT = productive activities with reminiscence in occupational therapy.

Patients

Thirty-six facility residents diagnosed with dementia (AD: 28 patients, VD: 8 patients), according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, were selected for the study. The selected patients were: (a) over the age of 65, (b) female, (c) had mild to severe dementia with Mini-Mental State Examination (MMSE) scores of 23 points or less, and (d) had not been diagnosed with any other mental disorders. Those who were emotionally unstable or unable to do the experimental tasks due to physical impairment were excluded.

The patients were randomly assigned to either the intervention group of 17 patients or the control group of 19 patients. Thirteen patients in the intervention group had AD, and four were diagnosed with VD, and 15 patients in the control group had AD and four had VD. No significant difference between the groups was observed in the proportions of those with different types of dementia ($p = .86$, by the chi-square test).

The intervention group was broken up into three subgroups consisting of five to seven patients each, and the intervention was conducted in these three groups at different times. The control group was similarly split up into three subgroups.

This study was approved by the Medical Ethics Committee of Kobe University Graduate School of Medicine. We also obtained the consent of all the patients. The patients had the option of not participating and their personal information was kept strictly confidential and anonymous. The institutional facilities and families of patients were fully informed of the purpose of the study and the advantages and risks of participating, and their consent was obtained in advance.

Procedure

The PAROT intervention group met for six consecutive, 40-minute weekly sessions. The sessions consisted of making and eating rice balls (*onigiri* and *ohagi*), while reminiscing about events and episodes in the past associated with these activities. Three interveners (occupational therapists) were on hand to assist in making the rice balls and to prompt reminiscence. All six sessions were conducted in the same way. Three occupational therapists were also present in the control group sessions, but the control group patients only ate the rice balls. They did not engage in making the rice balls or reminiscing. While the study was in progress, both the intervention and control groups continued to receive usual care.

Evaluation

Four scales were used to evaluate the data from the two groups before and after 6 weeks of intervention. Measurement and scoring were done by occupational therapists employed at the facilities.

- The Cornell Scale for Depression in Dementia (CSDD; Alexopoulos, Abrams, Young, & Shamoian, 1988) is a 19-item scale for assessing depression associated with

dementia. The CSDD evaluates symptoms in terms of three levels of gravity. A total score is derived by adding the scores for each of the 19 items. The higher the score, the greater the indication of depression.

- Multidimensional Observation Scale for Elderly Subjects (MOSES; Helmes, Csapo, & Short, 1987) consists of 40 items divided into five scales, namely, self-care functioning, disoriented behaviour, depression/anxiety, irritability, and withdrawn behaviour. Items are scored from 1 to 4 or 5, with lower total scores indicating lower levels of impairment or dysfunctional behaviour.
- Vitality Index (Toba et al., 2002) was used to assess motivation of elderly patients with dementia towards daily living. The Vitality Index is a scale consisting of five items that measure waking pattern, ability to communicate, feeding, using the toilet, and rehabilitation and other activities. A total score is calculated by adding all the items. A cutoff score of 7 or less indicates low motivation.
- A Japanese version of MMSE (Mori, Mitani, & Yamadori, 1985) was used to assess cognitive functioning of the elderly patients with dementia.

Task performance was evaluated in the intervention group as follows: change in the ability to perform the task (i.e., the ability to make *onigiri* and *ohagi* rice balls) was judged by 10 Japanese university students (who had no knowledge of the nature of the study) based on photographs of the *onigiri* and *ohagi* taken after the first and the sixth (i.e., the last) intervention session for the 15-patient intervention group. Comparing the first session photos with the sixth session photos, the 10 judges scored the changes on a five-point scale: 1 = much improved; 2 = somewhat improved; 3 = unchanged; 4 = somewhat worse; and 5 = much worse. An assessment value was then derived based on the median of the 10 judges' scores. The rating scale was a Likert-type scale (Likert, 1932).

Statistical analysis

All statistical analyses were performed using SPSS Version 13.01 for Windows (SPSS Inc., Chicago, IL, USA). We compared the intervention and control groups using the Mann–Whitney U test and did before-and-after comparisons within each group with the Wilcoxon signed-rank test. Significant difference was defined as 5% level. We also compared CSDD and Vitality Index subscore as indicators of effectiveness.

Results

A summary of the demographic data for the two groups is shown in Table 2. There were no significant differences in any of the demographic baseline variables (age, education, and length of institutionalization) nor were there any significant differences in the MMSE, MOSES, or Vitality Index baseline scores between the two groups.

While the study was in progress, a total of six patients dropped out—two patients from the intervention group and four patients from the control group—for the following reasons: one suffered a stroke, another dropped out due to

Table 2 Demographic Characteristics of Patients (Recruited Participants, $n = 36$).

Outcome variable	Experimental ($n = 17$)	Control ($n = 19$)	p
	Mean (SD)	Mean (SD)	
Age	84.76 (6.89)	87.16 (4.57)	.47
Years of education	9.59 (2.01)	9.05 (1.55)	.28
Length of institutionalization (y)	2.65 (1.04)	3.47 (2.18)	.49
Degree of severity (based on MMSE scores)			
Mild (20–23)	2	4	
Moderate (10–19)	13	10	
Severe (0–9)	2	5	

MMSE = Mini-Mental State Examination; SD = standard deviation.

poor health, and four patients were transferred to other facilities. A total of 30 patients completed the study through to the end, 15 patients in the intervention group (88.2%) and 15 members in the control group (78.9%). Those who dropped out were not considered in the final analysis. The participation rate of the 30 patients was 100% for all six sessions. Medical regimens of the patients were not changed during the study.

By comparing the PAROT and control groups after the six sessions, we did not observe any significant differences in the overall CSDD, MOSES, Vitality Index, or MMSE scores. However, when considering depression-related symptoms,

we did find significant statistical differences in the CSDD subscore *early morning awakening* ($p = .046$) and in the Vitality Index subscore *communication* ($p = .03$) between the intervention and control groups. Before-and-after comparison revealed that CSDD and MOSES *depression* scores for the intervention group were significantly reduced (Table 3). Reduced depression (CSDD and MOSES define depression as >1 point) was observed in elderly patients across the entire spectrum of cognitive impairment from mild-to-severe dementia: two out of two patients with MMSE scores of 0–9 saw improvement (100% for CSDD and 50% for MOSES, respectively), six out of 11 patients with scores 10–19 improved (36% and 27%), and one out of two patients with scores 20–23 improved (50% and 0%). The improvement in CSDD and MOSES *depression* scores was not correlated with the severity of dementia (change score in CSDD vs. MMSE: $n = 15$, $r = .15$, $p = .59$; change score in MOSES depression vs. MMSE: $n = 15$, $r = .15$, $p = .59$, based on Spearman's rank correlation test).

The ability of the intervention group to perform the assigned task (make rice balls) also showed significant improvement, with the work of 13 out of the 15 patients in the group evaluated as either *much improved* or *somewhat improved*. The remaining two patients in the group showed *no change* (Table 4). Fig. 1 shows typical *onigiri* and *ohagi* rice balls made by one of the patients in the intervention group during the first and sixth sessions. Improvement in the ability to perform the tasks was exhibited across the board for all patients with mild to severe dementia regardless of degree of cognitive impairment: two out of two patients with MMSE scores 0–9 improved (100%), 11 out of 13 patients with scores 10–19 improved (84.6%), and two out of two patients with scores 20–23 improved (100%). We found no significant correlation between the degree of

Table 3 Outcome Measures for the PAROT Intervention and Control Groups ($n = 30$).

Outcome variable	PAROT intervention ($n = 15$)			Control ($n = 15$)			Group effect p^{**}
	Pretest	Post-test	p^*	Pretest	Post-test	p^*	
	Mean (SD)			Mean (SD)			
MMSE							
Total	13.07 (4.44)	13.47 (4.78)	.41	14.20 (6.44)	13.80 (6.98)	.65	.98
MOSES							
Self-care	16.73 (4.64)	16.53 (4.24)	.43	15.13 (5.80)	15.80 (6.78)	.27	.37
Disorientation	21.93 (5.09)	21.73 (5.74)	.59	19.47 (5.54)	19.87 (6.31)	.79	.57
Depression	12.27 (4.99)	11.67 (4.95)	.02 ***	12.53 (4.60)	12.80 (4.78)	.40	.60
Irritability	11.00 (3.34)	10.93 (2.60)	.71	11.53 (3.25)	12.27 (4.71)	.40	.60
Withdrawal	19.80 (5.28)	19.00 (5.99)	.19	19.00 (5.15)	19.13 (5.44)	.89	.97
CSDD							
Total	4.00 (3.76)	3.40 (3.83)	.04 ***	4.73 (3.85)	4.27 (3.72)	.34	.44
Early morning awakening	0.13 (0.35)	0.13 (0.35)	$<.99$	0.40 (0.51)	0.53 (0.64)	.16	.046 ***
Vitality Index							
Total	7.87 (1.92)	7.67 (2.06)	.08	8.13 (1.68)	8.33 (1.45)	.26	.42
Communication	1.60 (0.51)	1.73 (0.46)	.16	1.47 (0.52)	1.33 (0.49)	.16	.03 ***

CSDD = Cornell Scale for Depression in Dementia; MMSE = Mini-Mental State Examination; MOSES = Multidimensional Observation Scale for Elderly Subjects; PAROT = productive activities with reminiscence in occupational therapy; SD = standard deviation.

*Prescore and postscore comparisons within groups.

**Post hoc comparisons between the intervention and control groups.

***Significance at .05 level.

Table 4 Changes in Task Performance in the PAROT Intervention Group ($n = 15$).

		Number (persons)
Improved	1 = Much improved	9
	2 = Somewhat improved	4
	3 = Unchanged	2
Worse	4 = Somewhat worse	0
	5 = Much worse	0

Task performance was judged by 10 Japanese university students (who had no knowledge of the nature of the study) based on photographs of the *onigiri* and *ohagi* taken after the first and the sixth intervention sessions for the 15-patient intervention group.

PAROT = productive activities with reminiscence in occupational therapy.

improvement in forming the rice balls and degree of dementia (MMSE score) (Spearman's rank correlation test showed, $r = -.07$, $p = .82$).

Discussion

This study evaluated the effects of PAROT for elderly people with dementia in Japan. The patients had mild to severe dementia, and all including two participants with severe dementia completed the study. Research on reminiscence therapy to date has focused on intervention techniques involving the use of language, and are thus well suited for patients with relatively mild to moderate dementia; yet, this dependence on language rules out this approach for patients with severe dementia. By contrast, our intervention approach involves an everyday activity that the patients performed many times in the past, and does not necessarily require communication skills at all. This suggests the possibility that our intervention technique could potentially help patients with severe dementia who have lost much of their ability to communicate verbally.

Comparing the intervention and the control groups, no significant improvement was observed in the total CSDD scores or in the MOSES depression scores. However, before-and-after comparisons revealed that the scores of the depressive symptoms were significantly reduced in the intervention group. Many previous studies of different psychosocial intervention techniques—reminiscence therapy, music therapy, activity programmes, and so on—have reported success in alleviating depressive symptoms in elderly adults with dementia (Chin, 2007; Chung, 2009; Han et al., 2010). Our results were similar, suggesting that the intervention we propose may alleviate depressive symptoms of people with dementia. In addition, we found significant differences in the CSDD subscore *early morning awakening* and in the Vitality Index subscore *communication* between the two groups, which suggests that PAROT may help prevent deterioration of sleep and communication disorders.

We also observed improved task performance in patients across the entire spectrum from mild to severe dementia. There have been very few psychosocial therapy studies designed to improve the ability of dementia patients for performing tasks. Lam et al. (2010) reported that the ability to perform activities was improved by an individualized functional training programme. However, this study and the few others that address the issue excluded patients with severe dementia. One of the key distinguishing features of our intervention is that the patients repeatedly performed a task that they are all very familiar with. We hypothesized that performing occupational therapy activities while reminiscing about the activities awakens lingering procedural memory, and this accounts for the ability of patients to improve on performance of old familiar activities. We speculate that the two types of intervention—physical activity combined with reminiscing—interact synergistically to improve the ability of older people with mild to severe dementia in performing tasks. Diminished task performance is clearly a factor causing difficulty with activities of daily living. The fact that there are practically no interventions

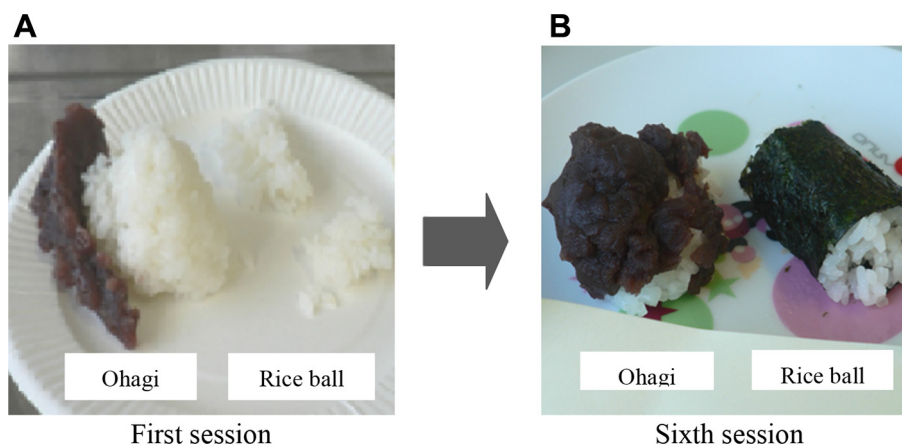


Figure 1 Typical *onigiri* and *ohagi* rice balls. Rice balls produced by one of the participants in the study, an 86-year-old woman (MMSE = 11) suffering from vascular dementia for 2 years, in the first and sixth sessions. (A) First session efforts are poorly formed: the *onigiri* rice ball broke into two, and she could not get the *anko* bean paste to stick on top of the *ohagi*. (B) By the sixth session, the patient's *onigiri* was well formed with *nori* (seaweed) wrapped around it, and the *ohagi* was well coated with a layer of sweet *anko* bean paste (both were properly formed).

with the explicit goal of improving task performance associated with daily living motivated our effort to develop such an intervention. It is clear that if an individual is able to learn to perform a task linked to daily living that was difficult or impossible before, the person would be delighted, and we infer that this would also lead to an improved emotional state. Indeed, we observed in our work that emotional change for the better is generally associated with improved task performance. Graff et al. (2007) conducted an intervention into the instrumental activities of daily living in dementia patients and found that the quality of life (QOL) of the patients improved. Politis et al. (2004) compared a kit-based activity intervention and control group in dementia patients and found that the outcomes of both groups significantly improved, including QOL combined with the previous reports. Our findings suggest that better capability to perform routine tasks may improve QOL for elderly adults with dementia.

Finally, we point out some limitations of this study. First, the occupational therapists in the two groups were not completely blinded to the nature of the intervention. Second, our findings were based on a relatively small number of patients, all of whom were women. Third, so far no follow-up study has been conducted to corroborate the findings. A future follow-up study should include a larger sample and should include men as well. Moreover, this study only evaluated tasks performed by patients in the intervention group. Future work should put greater emphasis on comparison with the control group, and assess results for different types of tasks and activities. In addition, as noted earlier, our study only involved six intervention sessions. Therefore, there is a need to conduct a longer study involving more sessions to fully assess the ability of this approach to positively affect depressive symptoms and cognitive functioning.

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