A randomized, controlled, clinical trial of activity therapy for apathy in patients with dementia residing in long-term care

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SUMMARY

Background  Apathy is a common symptom in patients with dementia and has adverse consequences for patients and caregivers. Most treatments for apathy, particularly non-pharmacologic interventions, have not been evaluated in controlled trials.

Objectives  This study evaluated the efficacy of a kit-based activity intervention, compared to a time and attention control (one-on-one meetings with an activity therapist) in reducing apathy and improving quality of life in 37 patients with dementia.

Methods  The design was a randomized, controlled, partially masked clinical trial. All outcome measures were administered at baseline and follow-up. The primary outcome measure was the apathy score of the Neuropsychiatric Inventory (NPI). Other outcome measures were the NPI total score, the Alzheimer Disease Related Quality of Life scale (ADQRL), and the Copper Ridge Activity Index (CRAI).

Results  There was a significant reduction in NPI apathy scores in both treatment groups. The only significant difference between the two treatment groups was a modest advantage for the control intervention on the CRAI cueing subscale (p = 0.027), but not on the other CRAI subscales. There was also a greater within group improvement in quality of life ratings in the control intervention (p = 0.03).

Conclusions  Despite the substantial improvement in apathy scores during the course of the study, there was no clear advantage to the reminiscence-based intervention over the time and attention, one-on-one control intervention. More research is needed to develop specific behavioral interventions for apathy in patients with dementia. Copyright © 2004 John Wiley & Sons, Ltd.

key words — apathy; Alzheimer’s disease; quality of life; reminiscence therapy; dementia; nursing home; long term care

INTRODUCTION

Dementia is a serious public health problem characterized by cognitive decline and other neuropsychiatric symptoms including apathy. Apathy, a state of reduced or absent motivation and interest, is found in 50–70% of patients with dementia (Cummings et al., 1994; Lyketsos et al., 2002). Apathy is distinguishable from depression, and can be reliably measured (Marin et al., 1991; Cummings et al., 1994).

Neurophysiologic correlates of apathy include right anterior tempo-parietal blood flow reductions (in Alzheimer’s disease) (Marin et al., 1993; Marin, 1997) and hypo-activity of the dopamine system in several neurologic diseases (Duffy and Kant, 1997).

Apathy has consequences for dementia patients including physical deconditioning, failure of rehabilitation, worse performance on activities of daily living, uncooperativeness with care, combativeness, social isolation and caregiver distress. Adverse interpersonal interactions, such as uncooperativeness with care, occur when caregivers attempt to motivate patients to become more active, when in fact patients would prefer to be left alone. In addition, caregivers’ misinterpretation of low (or absent) motivation as oppositional behavior, as indifference to the relationship or
A wide range of approaches have been developed to treat the neuropsychiatric complications of dementia (Mather et al., 1997; Churchill et al., 1999; Rabins et al., 1999; Gerdner et al., 2000; Teri et al., 2000; Cohen-Mansfield, 2001; Trinh et al., 2003). There is a large literature on the use of non-pharmacologic interventions to treat the behavioral and neuropsychiatric symptoms of dementia. This has recently been reviewed (Cohen-Mansfield, 2001). In general, a wide-range of interventions have been developed and studied, typically in uncontrolled studies. It is beyond the scope of this report to summarize these findings, and the reader is referred to the work of Cohen-Mansfield for in depth reading (Cohen-Mansfield, 2001). It is notable that we could in the literature find no published controlled treatment trials targeted at apathy in dementia using pharmacologic or non-pharmacologic interventions.

None of the non-pharmacologic ‘behavioral’ interventions developed for the treatment of neuropsychiatric complications of dementia, such as reminiscence and music therapies were designed to target apathy, and very few have been evaluated in controlled clinical trials (Cohen-Mansfield, 2001). There is some evidence from controlled clinical trials that cholinesterase inhibitors may reduce apathy in patients with Alzheimer’s disease, but these studies did not specifically target apathy (Trinh et al., 2003).

The primary goal of reminiscence therapy is to facilitate recall of experiences from the past in order to promote intrapersonal and interpersonal functioning, and thereby improve well-being (Teri et al., 2000; Goldwasser et al., 1987). According to Woods (1992) reminiscence therapy provides a structured way for the patient to become involved with others. Typically, the goals of reminiscence therapy are achieved by the use of themes, props and triggers (Woods, 1992), such as a series of visual cues (pictures, words, maps) and/or auditory cues (music, spoken words). Given its content, reminiscence-based activity therapy may have particular value in treating apathy in patients with dementia. Geriatrics Network Inc. has developed a series of mental stimulation kits that standardize and guide one-on-one reminiscence activity with patients suffering from dementia (http://www.vetrol.com/kits/kits.htm). These kits, which utilize visual and audio prompts, are used by an activity therapist to provide mental stimulation, reminiscence, and activity engagement.

In our clinical experience at Copper Ridge we have observed that dementia patients with apathy respond to one-on-one attention—spending about a half hour in a comfortable setting with a staff member who engages them, even if this level of attention is provided only a few times per week. Patients, for the most part, engage well during these sessions and they seem to be less irritable or combative at other times. Neither our clinical observations, nor results from reminiscence therapy, has been assessed in controlled trials of apathy treatment. Both of these interventions may reduce apathy, improve participation in other activities, and reduce irritability and combative ness in patients with dementia. The trial herein was designed to test this possibility, to evaluate the more expensive reminiscence-based activity intervention of Geriatrics Network Inc. against the simple one-on-one activity intervention described above (which controls for time and attention), in terms of their ability to reduce apathy. It also evaluates the effect of both interventions on overall behavioral disturbance, overall activity participation, and quality of life.

METHODS

Design

This was a randomized, controlled, parallel, partially-masked (rater) four-week clinical trial.

Participants

Participants were 37 residents of Copper Ridge recruited between January 2001 and June 2002, although one participant dropped out before randomization. Copper Ridge is a model care facility specializing in the long term care of patients with dementia, and has been affiliated with the Johns Hopkins Division of Geriatric Psychiatry and Neuropsychiatry since its opening in 1994. The Copper Ridge environment is well suited to the conduct of treatment studies. Research methods at Copper Ridge have been previously described (Kopetz et al., 2000). Informed consent was obtained, under the oversight of a Johns Hopkins Hospital Institutional Review Board, from all participants and/or their legal representative.

Inclusion criteria for the study were:

1. Diagnosis of dementia by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (APA, 1994);
2. Presence of apathy based on a judgment of the staff that the patient had relatively low interest and involvement in day-to-day activities at Copper Ridge;
3. A Global Deterioration Scale (GDS) (Reisberg et al., 1982) score of 3 to 5;
4. Ability to engage in a simple activity or a brief conversation.
Enrolled patients were rated on the total Neuropsychiatry Inventory (NPI) (Cummings et al., 1994), the apathy subsection of the NPI, and the Alzheimer’s Disease Related Quality of Life (ADQRL) (Rabins et al., 1999) to establish a baseline. Participants were also rated, independent of the study, on the Copper Ridge Activity Index (CRAI) (see below). CRAI ratings at Copper Ridge are completed after each activity that is part of customary care. Typically each resident is rated on the CRAI after each specific activity, whether provided on a one-on-one basis or in a group setting (such as swimming, crafts, music appreciation and so on). Ratings are made by the activity and other clinical staff, who have been trained to use the scale. Thus the CRAI data were collected as part of customary care. Average scale ratings for the four weeks before the interventions, for each week during the interventions, and for the four weeks after the interventions, were used to assess the effects of the interventions on activity participation.

Randomization

After baseline ratings, participants were assigned using a table of random numbers, in blocks of four, to one of the two interventions. Eighteen participants were assigned to each of the two groups. The assigned intervention was administered three times a week for 30 minutes, over 4 weeks, by a trained activity therapist. There were no missed intervention visits in either condition—the activity therapist had the flexibility of scheduling the time of intervention according to the availability of the participant. After randomization, no psychoactive medication changes were made in the course of the study.

Interventions

The following two interventions were used:

1) ‘The geriatrics network kit’ or the ‘kit’ (Experimental intervention). This intervention was chosen because it is a standardized, structured activity method that attempts to provide mental stimulation, which might be especially helpful to apathetic patients. At the start of each visit, the activity therapist explains the purpose of the visit, shows the participant the activity kit, and asks for the participant’s help. Then the therapist and participant go to a well-lit private location, usually the patient’s room, where each sits in a comfortable chair. The therapist and patient setup the kit and then choose an activity. The choice of activity is based on the participant’s interests and is often rotated from visit to visit. There are five types of activities in the kit: geography, fun foods, farm animals, vegetables, and musical instruments. The geography kit, as an example, contains a large map showing the 50 states and cards that contain questions regarding US geography. There are two packs of cards with different degrees of difficulty and a die with dots (dots determine what type of question the participant receives). The participant typically holds the cards while the therapist reads the questions on the card. Some questions require a true or false response and some require the participant to look at the pictures and then point out the answer on the cards. A sample question is ‘What direction would you be traveling if you were going from Pennsylvania to Colorado?’ The therapist waits for a response, and conversation occurs after the question. Questions continue until the half-hour elapses. Similar interactions take place with the other kit activities. The fun foods portion kit focuses on asking residents to name fruits and count items, or asking them to talk about desserts and their past experiences baking and growing. The farm animal and vegetable kit contain questions about where foods are grown or what residents like to eat and cook. The musical instrument kit has a tape that plays music from an instrument. The resident has to identify the type of instrument that is being played and say whether they like the music. When the 30-minutes are over, the therapist ends the activity and thanks the participant.

‘One-on-one’ (Time and attention control). The activity therapist locates the participant, introduces herself, and asks if the participant wants to spend some time together. If the participant agrees, they go to a comfortable and private setting, and the therapist explains the purpose of the visit and asks the resident to talk about some of his/her past and interests. Then the therapist asks the participant questions about his/her past and interests. The therapist lets the participant choose what they do together. Some of the visits are discussions, while others involve activities such as puzzles, artwork and reading, or a mixture of these activities. These visits are unstructured, relaxed interactions lasting half an hour.

2) Quality control regarding the delivery of study interventions. To ensure consistent delivery of each intervention, the activity therapist who delivered all interventions met regularly with her supervisor, one of the investigators (SV). During these sessions
the different interventions methods were reviewed and reinforced around specific case studies of the participants.

Outcome assessment

The primary outcome measure was the NPI apathy domain. Secondary measures were the total NPI score, the ADQRL scale and the CRAI. The NPI and ADRQL were rated two weeks after the completion of the intervention. Outcome raters were masked as to the condition of treatment assignment.

NPI apathy domain and total NPI score (Cummings et al., 1994). NPI is widely used to quantify behavioral disturbance in patients with dementia. Each of 12 domains is assessed on a different subscale: delusions, hallucinations, agitation/aggression, depression/ dysphoria, anxiety, elation/euphoria, apathy/indifference, disinhibition, irritability/lability, aberrant motor behavior, sleep and appetite. Each domain quantifies the severity and frequency in the past month of the relevant symptoms on a 12-point scale, with a higher score reflecting more severe disturbance. The apathy domain specifically includes eight observable behaviors suggestive of apathy, such as loss of interest, loss of motivation, poor engagement and indifference. The total domain score is 12 points with higher scores reflecting more severe disturbance.

Alzheimer’s Disease Related Quality of Life scale (ADQRL) (Rabins et al., 1999). The resident’s quality of life was rated using the ADQRL, which is a reliable behavior-based assessment of quality of life over the past week, shown to be sensitive to change. It is administrated by interviewing the primary caregiver of the patient, and consists of 47 items that describe behaviors associated with five domains of quality of life. These domains are: social interaction, awareness of self, feelings and mood, enjoyment of activities and response to one’s surroundings. Each item has a weight score. Weighted scores are summed to yield a total raw score. This is divided into the total possible score and multiplied by 100 to produce the final score. Higher scores reflect better quality of life.

Copper Ridge Activities Index (CRAI). The CRAI was developed by the Copper Ridge Institute in collaboration with the Copper Ridge Activities Department to measure activity success for patients with dementia residing in long-term care. It quantifies activities along three dimensions: participation (1–6 points), cueing (1–3 points), and enjoyment (1–5 points). Higher scores reflect less participation, more need for cueing, or greater enjoyment of the activities. Data were available on CRAI for all study participants for the 4 weeks before and the 4 weeks after the intervention. Prior to the start of this study, the CRAI was evaluated in a limited reliability study in which 30 patients with dementia were rated independently by two activity therapists after a series of activities. The inter-rater correlation coefficient (ICC) was 0.92 \( (F(41,41) = 12.18, p < 0.0001) \) for the participation scale, 0.69 \( (F(41,41) = 3.25, p < 0.0001) \) for the cueing scale, and 0.78 \( (F(41,41) = 4.64, p < 0.0001) \) for the enjoyment scale—indicating good reliability for these scales.

Statistical analyses

Both intervention groups were compared at baseline to assess whether the randomization was successful. The initial descriptive analysis showed outliers both pre- and post-treatment on the NPI and ADRQL. Therefore, a non-parametric test, the Mann–Whitney U test for independent samples, was used to compare the treatment groups on these measures before and after treatment. For the same reason, the non-parametric Wilcoxon test for related samples was used to compare outcome measures within treatment groups. For the CRAI data, a repeated measures analysis of variance (ANOVA) model was used to compare the two groups over the 4 weeks of treatment. Within-subjects effect sizes were estimated \((\eta^2 \text{ or } \text{’eta squared’})\).

RESULTS

The baseline comparison of the two groups on common demographic variables, dementia characteristics and baseline ratings of the study outcome measures are presented in Table 1. The Mini-Mental State Exam (MMSE) (Folstein, et al., 1975), administered at baseline, was used to quantify dementia severity. Participants randomized to the ‘kit’ group were significantly better educated; there was a slight tendency for the control group (‘one-on-one’) to have lower (worse) scores on the ADRQL.

A comparison of the groups on the NPI-apathy, total NPI, and ADRQL two weeks after the last visit in the treatment period (week 4) using the non-parametric tests is presented in Table 2. The Table also contains within group comparisons before and after intervention, also using non-parametric tests. There

were significant within group improvements on NPI-apathy and total NPI scores in both groups over the 4 weeks of the intervention. The control group, but not the ‘kit’ group, also showed a significant within group improvement in quality of life ratings on the ADQRL. This may reflect the fact that the patients in the control group had a trend toward lower scores on ADRQL at baseline than did the ‘kit’ group. Despite the within group differences, there were no significant between group differences on any of the measures in the Table, assessed at two weeks after the end of the last intervention visit.

Means over time on the CRAI measures, and the results of the ANOVA, with p-values, for each component of the CRAI are presented in Table 3. Between the groups, the only difference was a modest decrease in the need for cueing in the control group. Results were similar when CRAI data for the 4 weeks before

<table>
<thead>
<tr>
<th>Variable</th>
<th>‘Kit’ (n = 18)</th>
<th>One-on-one (n = 18)</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>Mean (SD)</td>
<td>84.4 (4.5)</td>
<td>83.5 (4.9)</td>
</tr>
<tr>
<td>Gender</td>
<td>n, % (female)</td>
<td>15 (50)</td>
<td>15 (50)</td>
</tr>
<tr>
<td>Education (yrs)</td>
<td>Mean (SD)</td>
<td>13.9 (2.5)</td>
<td>12.1 (2.5)</td>
</tr>
<tr>
<td>Dementia duration (yrs)</td>
<td>Mean (SD)</td>
<td>8.2 (3.5)</td>
<td>6.5 (2.9)</td>
</tr>
<tr>
<td>MMSE (16)</td>
<td>Mean (SD)</td>
<td>8.7 (5.9)</td>
<td>10.2 (5.3)</td>
</tr>
<tr>
<td>Diagnosis n, % (Alzheimer)</td>
<td>15 (60)</td>
<td>Fisher’s p = 0.17</td>
<td></td>
</tr>
<tr>
<td>NPI total</td>
<td>Mean (SD)</td>
<td>16.1 (10.1)</td>
<td>21.2 (16.4)</td>
</tr>
<tr>
<td>ADQRL Mean (SD)</td>
<td>72.6 (9.1)</td>
<td>64.7 (15.0)</td>
<td>z = −1.86, p = 0.06</td>
</tr>
<tr>
<td>GDS Mean (SD)</td>
<td>4.9 (1.0)</td>
<td>5.2 (1.1)</td>
<td>z = −0.78, p = 0.43</td>
</tr>
<tr>
<td>CRAI participation Mean (SD)</td>
<td>3.1 (0.9)</td>
<td>2.5 (0.6)</td>
<td>z = −0.095, p = 0.93</td>
</tr>
<tr>
<td>CRAI cueing Mean (SD)</td>
<td>2.0 (1.1)</td>
<td>1.8 (0.5)</td>
<td>z = −0.288, p = 0.77</td>
</tr>
<tr>
<td>CRAI enjoyment Mean (SD)</td>
<td>4.2 (0.5)</td>
<td>4.3 (0.6)</td>
<td>z = −0.779, p = 0.44</td>
</tr>
</tbody>
</table>

1z-values are from Mann Whitney test between groups.

### Table 2. Change from baseline to the two weeks post-intervention on the NPI-apathy, total NPI, and ADQRL

<table>
<thead>
<tr>
<th></th>
<th>‘Kit’ (n = 18)</th>
<th>One-on-one (n = 18)</th>
<th>Between groups*</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPI-apathy Baseline Mean (SD)</td>
<td>5.4 (4.8)</td>
<td>6.2 (4.3)</td>
<td>z = −0.983, p = 0.33</td>
</tr>
<tr>
<td>Post-intervention Mean (SD)</td>
<td>1.2 (2.3)</td>
<td>2.3 (3.8)</td>
<td>z = −0.526, p = 0.60</td>
</tr>
<tr>
<td>Total NPI Baseline Mean (SD)</td>
<td>16.2 (21.2)</td>
<td>21.2 (16.4)</td>
<td>z = −0.564, p = 0.57</td>
</tr>
<tr>
<td>Post-intervention Mean (SD)</td>
<td>10.0 (10.3)</td>
<td>9.8 (11.5)</td>
<td>z = −0.646, p = 0.52</td>
</tr>
<tr>
<td>ADQRL Baseline Mean (SD)</td>
<td>72.6 (9.1)</td>
<td>64.7 (15.0)</td>
<td>z = −1.863, p = 0.06</td>
</tr>
<tr>
<td>Post-intervention Mean (SD)</td>
<td>73.7 (16.0)</td>
<td>74.9 (14.5)</td>
<td>z = −0.057, p = 0.96</td>
</tr>
</tbody>
</table>

*Mann–Whitney test between groups; and Wilcoxon test within groups.

### Table 3. Means at baseline and each follow up visit and results of the repeated measures ANCOVA models for the CRAI ratings

<table>
<thead>
<tr>
<th></th>
<th>‘Kit’ (n = 18) Mean (SE)</th>
<th>One to one (n = 18) Mean (SE)</th>
<th>F (1,34)</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRAI participation</td>
<td>Week 1: 2.96 (0.1)</td>
<td>2.90 (0.1)</td>
<td>2.96 (0.2)</td>
<td>3.37 (0.1)</td>
<td>2.802 0.10 0.08</td>
</tr>
<tr>
<td></td>
<td>Week 2: 2.87 (0.1)</td>
<td>3.07 (0.1)</td>
<td>2.76 (0.1)</td>
<td>3.45 (0.1)</td>
<td>2.209 0.16 0.11</td>
</tr>
<tr>
<td>CRAI cueing</td>
<td>Week 1: 1.95 (0.1)</td>
<td>1.70 (0.09)</td>
<td>1.86 (0.09)</td>
<td>1.63 (0.09)</td>
<td>5.355 0.027 0.14</td>
</tr>
<tr>
<td></td>
<td>Week 2: 1.89 (0.1)</td>
<td>1.63 (0.1)</td>
<td>1.87 (0.08)</td>
<td>1.64 (0.08)</td>
<td>3.37 (0.1)</td>
</tr>
<tr>
<td>CRAI enjoyment</td>
<td>Week 1: 4.18 (0.1)</td>
<td>4.27 (0.1)</td>
<td>4.26 (0.09)</td>
<td>4.33 (0.09)</td>
<td>1.492 0.23 0.04</td>
</tr>
<tr>
<td></td>
<td>Week 2: 4.06 (0.1)</td>
<td>4.16 (0.1)</td>
<td>4.06 (0.1)</td>
<td>4.16 (0.1)</td>
<td>2.96 (0.2)</td>
</tr>
</tbody>
</table>

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DISCUSSION

This randomized controlled trial compared a reminiscence based ‘kit’ intervention to a time and attention ‘one-on-one’ control, for the treatment of apathy in patients with dementia who live in a long-term care facility. While there was significant improvement in apathy and total neuropsychiatric disturbance over the course of the study, there was no substantive difference between the treatment groups on any of the outcome measures. If anything, the participants in the control group did slightly better, with modestly improved quality of life and reduced need for cueing in non-study activities.

The ADQRL was used to evaluate the quality of life of the participants. Despite no difference between the two groups on this measure, there was a clear, though modest, within group improvement in quality of life ratings among participants in the ‘one-on-one’ control group over the treatment period. If this finding is not an artifact of differences between the two groups at baseline, it may be that social contact explains the apparent benefit, suggesting that an activity therapist who is creative and well versed in the resident’s interests can have a greater impact on the patient than the use of a standardized activities kit.

The CRAI was used to investigate the effects of the treatments on aspects of activity participation in routine day-to-day activities available in long-term care. The CRAI is the first reliable, standardized measure developed for this purpose. Findings with regard to this measure showed a very modest advantage to the one-on-one control group on the CRAI cueing subscale. However, this difference had only a small between groups effect size (η = 0.14) and may have been a chance finding. Multiple testing can produce chance findings. Thus, this study failed to support the hypothesis that a specific activity intervention, such as the ‘kit’ intervention used here, has any specific benefit, when that benefit may be due to the attention given.

The improvement in apathy and neuropsychiatric disturbance seen in both groups may indicate that the ‘kit’ activity and the ‘one-on-one’ control activity have comparable efficacy. In contrast, since there was no untreated control, this finding may be the result of the short-term natural course of apathy and neuropsychiatric disturbance over time in this patient population. It is also possible that this improvement was the result of rater bias since raters knew that the patients were receiving some treatment for apathy, even though they were masked as to the specific treatment assignment. Along the same lines, this improvement may be the result of positive treatment effects associated with being in a study. This is consistent with what has been reported in the literature. According to Cohen-Mansfeld et al. (1998, 2001) and Runci et al. (1999) a social contact intervention may reduce disturbing behaviors, such as verbal agitation in chronic-care patients. The ‘one-on-one’ control may have provided more actual social contact than the scripted, and hence somewhat impersonal, ‘kit’ intervention. For these reasons, all interventions targeted at neuropsychiatric symptoms in dementia patients should be assessed against time and attention control interventions to avoid concluding that they have a specific benefit, when that benefit may be due to the attention given.

Apathy is partially a biologically based symptom of dementia, an aspect of Executive Dysfunction Syndrome (Lyketsos et al., in press), and is probably caused by damage to frontal-subcortical brain circuits (Craigs and Cummings, 1996; Benoir et al., 1999). In this sense, apathy differs from other neuropsychiatric symptoms that occur only in specific contexts, such as aggression during bathing that could stem from physical discomfort or unsuccessful caregiver approaches to personal care (Whall et al., 1997). Apathetic patients are more impaired in their ability to perform basic activities of daily living. Frees and Cohen (1992) suggested that patients with apathy are more impaired in the six basic activities of daily living (dressing, bathing, walking, eating, transferring, and toileting). Despite our finding no advantage to either intervention in this study, it seems that planned activity may improve apathy, although this must be confirmed in a randomized trial with an untreated control arm. The mechanism of action by which activity may improve apathy is unknown. It may work by overcoming the inability of apathetic patients to motivate themselves by providing an external motivator and general social stimulation. Or, it may work by providing a context and structure for patients who cannot provide these for themselves.

It is also of note that the improvement of apathy was associated with a more generalized improvement in neuropsychiatric disturbance, as evidenced by a global reduction of NPI scores in both groups. If it is not an artifact, this may be a specific result of the effect of interventions on other symptoms, or it may be that benefits for apathy lead to secondary benefits for other neuropsychiatric symptoms. This study leaves this question unanswered. The same can be
said for the improvement in quality of life ratings seen after the control intervention.

One potential practical implication of these findings for clinicians in long-term care settings is that regular one-on-one personal contact provided by any staff member (including a trained aide), may lead to improvements in neuropsychiatric disturbance and apathy in patients with dementia. We cannot specify the minimal duration of such an intervention, and can only say that in this study four weeks of the intervention may have been required before producing an improvement in apathy, overall neuropsychiatric disturbance, and quality of life.

Limitations of the study should be mentioned. One is the relatively small number of participants. But with this small number it was possible to see relatively large effects on the NPI, on average greater than 50% reduction in scores after the interventions. Therefore, the limitation of sample size was only relevant to the ability to detect very small, and probably clinically insignificant, advantages to either intervention. Another limitation is that the study took place at Copper Ridge where there is a very substantial amount of stimulating, background activity. In a less stimulating environment, it is possible that there may have been a specific advantage to either intervention. The study also included patients without a formal assessment for apathy. This may have introduced a selection bias drawing in patients with whom doing activities was not very challenging on a day-to-day basis, and excluded more angry, uncooperative patients. The baseline apathy scores on the NPI were quite elevated and are reassuring that in fact patients included in the study were apathetic. Further, both interventions were provided by a single activity therapist. It is possible that the results would have been different if several therapists had administered the interventions. Finally, we did not assess outcomes on scales of cognition and daily functioning, so that it is possible that there would have been clearer advantages to either intervention on other measures. However, we believe it to be unlikely that the study interventions would have affected these variables.

Despite the limitations, this study has several advantages over studies that have appeared in the literature (Opie et al., 1999; Rabins et al., 1999). It targeted apathy, a specific neuropsychiatric disturbance in dementia, as opposed to the overall ensemble of ‘Behavioural and Psychological Symptoms of Dementia’—which represents a highly heterogeneous group of conditions in their presentation, course, and etiology. Most studies have not been as focused. Also most studies of treatments for neuropsychiatric symptoms in dementia were not controlled at all (Camberg et al., 1999), or the studies were pre–post designs (Clark et al., 1998), which is a weaker design given that there is great variability in the natural course of neuropsychiatric symptoms over even short time-periods.

In other studies, control groups came from separate units or different nursing homes (Matteson et al., 1997; Ballard et al., 2002), which makes it difficult to control for differences in ‘case mix’ between facilities, removing the benefit of random assignment and opening the possibility of selection bias. Many studies did not use standardized instruments to quantify the treatment effects, especially with regard to activity participation. Since participation in activities is often the primary goal of treatment for patients with apathy, the CRAI is a useful instrument for quantifying the benefits of participation in activities in long-term care clinical settings or in clinical trials involving neuropsychiatric interventions.

Well-designed studies investigating treatments for neuropsychiatric symptoms in patients with dementia, especially those using non-pharmacological interventions, are sorely needed (Opie et al., 1999). A first step in their development is the standardization of interventions, targeted at specific problem behaviors or symptoms, that can be used in the diverse settings that dementia patients are seen. Another step is the evaluation of the benefits of these targeted interventions in well-designed, randomized, controlled studies. Issues of cognitive level, sensory deficits, social abilities and environmental resources all have an effect on the tailoring of such studies. Furthermore, it is necessary for the field to achieve agreement on what constitutes the proper control group for

**KEY POINTS**

- Apathy is common among residents of long-term care with dementia, but its treatment in this setting has not been adequately studied.
- In a randomized, controlled, partially masked clinical trial the efficacy of a reminiscence based activity intervention was compared to that of a time and attention control.
- Apathy improved substantially in both treatment groups, but there were no clear between treatment group treatment differences.
- More research is needed evaluating the efficacy of non-pharmacologic interventions targeted at specific behavioral symptoms associated with dementia.
non-pharmacologic interventions. This agreement will be helpful in planning rigorous clinical trials for estimating the efficacy of specific non-pharmacological treatments. As is apparent from our findings, very simple ‘one-on-one’ interventions may have powerful effects on the outcomes of interest, even in the short-term. This line of research will undoubtedly be of benefit to patients with dementia, and their caregivers, by leading to a better quality of life and perhaps positive effects on the course of dementia in institutional settings.

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