

Memory and communication support strategies in dementia: Effect of a training program for informal caregivers

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ABSTRACT

Background: People with dementia have a range of needs that are met by informal caregivers. A DVD-based training program was developed using research-based strategies for memory and communication in dementia. The effectiveness of the training on the caregiver experience and the well-being of the person with dementia was evaluated.

Methods: A pre-test/post-test controlled trial was undertaken with caregiver–care-recipient dyads living in the community. Measures of the carers' knowledge of memory and communication strategies, burden, positive perceptions of caregiving, and perceptions of problem behaviors were taken pre- and three months post-intervention. The depression and well-being of the person with dementia were also evaluated. Satisfaction with the training and feedback were measured.

Results: Twenty-nine dyads (13 training group, 16 control group) participated. Bonferroni's correction was made to adjust for multiple comparisons, setting α at 0.00385. A significant improvement was found in caregivers' knowledge for the training group compared to the control group ($p = 0.0011$). The training group caregivers reported a reduction in the frequency of care recipient disruptive behaviors ($p = 0.028$) and increased perceptions of positive aspects of caregiving ($p = 0.039$), both at a level approaching significance. The training group care recipients had increased frequency of verbally communicated depressive behaviors at a level approaching significance ($p = 0.0126$). The frequency of observed depressive behaviors was not significantly different between groups.

Conclusions: This approach to training for caregivers of people with dementia appears promising for its impact on knowledge and the caregiving experience. Further research could monitor the impact of the training on broader measures of depression and well-being, with a larger sample.

Key words: knowledge translation, community care, cognitive rehabilitation, communication skills, family, well-being, burden, stress

Introduction

Memory and communication difficulties resulting from dementia have been identified as causing particular distress for both caregivers and people with dementia themselves (Smith *et al.*, 2011). These features of dementia have the potential to impact directly on the relationship between the caregiver and care recipient, the effort required

in facilitating everyday tasks, and the enjoyment or distress associated with daily life (Brodaty *et al.*, 2003; Australian Institute of Health and Welfare, 2007a; Smith *et al.*, 2011). Helping carers to reach an understanding of dementia and develop strategies to facilitate coping with its effects (Rosa *et al.*, 2010) are important aims of interventions designed to reduce the burden of dementia (Brodaty *et al.*, 2003; Vernooij-Dassen *et al.*, 2011). Facilitating better coping has the potential to improve the quality of life of both the caregiver and the care recipient through enhancing interactions and reducing conflict, as well as contributing to a delay in the need for residential

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care (Brodaty *et al.*, 2003; Schulz and Martire, 2004; Parker *et al.*, 2008; Vernooij-Dassen *et al.*, 2011).

There has been a range of approaches targeting caregivers of people with dementia with the aim of reducing burden and prolonging their ability to provide care (Bourgeois *et al.*, 1996; Smits *et al.*, 2007; Parker *et al.*, 2008; Spijker *et al.*, 2008; Vernooij-Dassen *et al.*, 2011). A number of large reviews and meta-analyses have concluded that caregiver programs can be effective in reducing caregiver distress (Brodaty *et al.*, 2003; Parker *et al.*, 2008; Vernooij-Dassen *et al.*, 2011) and delaying the need for institutional care (Brodaty *et al.*, 2003; Spijker *et al.*, 2008). Although reviews have concluded that well-designed, evidence-based psychoeducational approaches and multifaceted support programs are effective (Parker *et al.*, 2008), the focus now is on determining as to which aspects and for whom these programs are effective (Smits *et al.*, 2007; Van Mierlo *et al.*, 2011; Vernooij-Dassen *et al.*, 2011). There is increasing recognition of the need for interventions to be cost effective and targeted, with minimal time, travel and energy requirements from already burdened caregivers (Lewis *et al.*, 2010; Vernooij-Dassen *et al.*, 2011).

Relatively few approaches to supporting caregivers and people with dementia have specifically targeted the communication and memory difficulties commonly reported (Smith *et al.*, 2011). A recent survey of the needs of family caregivers of people with moderate to severe dementia indicated that many felt they had specific educational needs, with 83% stating they needed education about effective communication strategies (Rosa *et al.*, 2010). Other common areas of educational need included managing memory or cognitive difficulties and behavioral issues (Rosa *et al.*, 2010). Although there is now a sizable body of research into the nature of memory and communication difficulties in dementia and potential approaches to help with these, there has been only limited application of the research findings in practice (Draper *et al.*, 2009; Smith *et al.*, 2011).

Existing approaches to caregiver training on communication issues have demonstrated some success in improving knowledge or awareness of communication strategies (Done and Thomas, 2001; Haberstroh *et al.*, 2011), reducing distress related to communication issues (Done and Thomas, 2001) and improving the quality of life of the care recipient (Haberstroh *et al.*, 2011). Done and Thomas (2001) compared a workshop and booklet as the media used to impart communication strategies to caregivers. Those who attended the two workshop sessions demonstrated higher levels of

improvement in knowledge of communication skills than those receiving the booklet; however, broader measures of burden and well-being did not show significant improvement for either group (Done and Thomas, 2001). More intensive approaches to communication training have also been developed. Haberstroh and colleagues (2011) evaluated a training program based on the TANDEM model. This required caregivers to attend five group sessions led by a trainer, with each session taking two and a half hours. The intervention demonstrated improvement in the care recipients' quality of life, as well as increased use of targeted communication strategies (Haberstroh *et al.*, 2011). Approaches to reducing the impact of memory difficulties in daily life, which have shown some effectiveness, have tended to take the form of direct cognitive rehabilitation approaches (Droes *et al.*, 2011) or training professional staff members in strategies (e.g. Cross *et al.*, 2008) rather than training family caregivers (Smith *et al.*, 2011).

Using a knowledge-translation approach (Draper *et al.*, 2009), and recognizing the impact of memory and communication difficulties and the need for caregiver support in this area, a multidisciplinary team developed a set of research-based strategies for caregivers (Smith *et al.*, 2011). The team involved clinicians, researchers, and educators in neuropsychology, psychogeriatrics, nursing, speech pathology, and communication, and sought input from experienced professional and informal caregivers. The strategies were called the RECAPS memory strategies in dementia and the MESSAGE communication strategies in dementia. Each letter in these two acronyms stands for a research-based strategy, which is summarized in Figure 1. A DVD presentation was developed that described and demonstrated the use of the strategies with people with dementia through explanation and vignettes. Accompanying written material summarized the content in the form of a booklet and display cards.

The RECAPS and MESSAGE program was developed for use with both professional and informal (family or friend) caregivers, with the aim of improving knowledge about strategies and reducing the negative impact of caregiving (Smith *et al.*, 2011). A pre-test/post-test controlled trial of the program was conducted with caregiving staff in nursing homes in Queensland, Australia (Broughton *et al.*, 2011). The trial showed a significant improvement in knowledge of support strategies for staff receiving the training compared to the control group, and this was maintained at three months follow-up. The caregiving staff expressed high levels of satisfaction with the training's usefulness and relevance to their work (Broughton *et al.*, 2011).

M – Maximize attention	<ol style="list-style-type: none"> 1. Attract attention 2. Maintain eye contact 3. Limit distractions 	R - Reminders	<ol style="list-style-type: none"> 1. Spoken prompts 2. Written and picture prompts
E - Expression and body language	<ol style="list-style-type: none"> 1. Relaxed and calm 2. Show interest 	E - Environment	<ol style="list-style-type: none"> 1. Have a permanent place for objects 2. Keep surroundings familiar and consistent
S – Keep it Simple	<ol style="list-style-type: none"> 1. Short, simple, familiar 2. Give clear choices 	C – Consistent routines	<ol style="list-style-type: none"> 1. Keep up familiar routines 2. Create new routines
S – Support their conversation	<ol style="list-style-type: none"> 1. Allow time 2. Assist with finding words 3. Repeat then rephrase 4. Remind of the topic 	A - Attention	<ol style="list-style-type: none"> 1. Reduce distractions 2. Redirect attention
A – Assist with visual Aids	<ol style="list-style-type: none"> 1. Gestures and actions 2. Objects and pictures 	P - Practice	<ol style="list-style-type: none"> 1. Keep using old skills to maintain them 2. Graded practice for new skills
G – Get their message	<ol style="list-style-type: none"> 1. Listen, watch and actively work out 2. Check behaviour and nonverbal messages 	S – Simple steps	<ol style="list-style-type: none"> 1. Break tasks down into simple steps 2. Allow enough time
E – Encourage and Engage in conversation	<ol style="list-style-type: none"> 1. Interesting, familiar topics 2. Talk about family, friends, life history 		

Figure 1. MESSAGE and RECAPS strategies.

While this approach was effective with formal caregiving staff, it was not known whether a brief multimedia training approach focusing on memory and communication would be effective with informal caregivers of people with dementia at home. In response, the present study addressed the following research questions:

RQ1. Does participation in the training program improve the caregiving experience by increasing knowledge, reducing burden, increasing positive perceptions of caregiving, and decreasing distress associated with problem behaviors compared to a control group?

RQ2. What indirect impact does participation in the training program have on the person with dementia in terms of depression and subjective well-being?

RQ3. How do family caregivers experience the training and how satisfied are they?

Methods

Design

The study was a pre-test/post-test controlled trial of the training program conducted in metropolitan and regional Queensland, Australia. Dyads consisting of an informal caregiver (family member or friend) and a person with dementia living at home, were randomly allocated to receive either the MESSAGE and RECAPS training or to receive no training (control) and data were collected at baseline and three months later. Given the brief nature of the intervention and concern about the time

pressures of the caregivers, training was compared to treatment as usual (TAU). Following terms of the agreements with the participants, the intervention was provided to the TAU group following final data collection.

The study formed part of a larger project which involved development of communication and memory training approaches for people caring for someone with dementia (i.e. the MESSAGE and RECAPS programs: Smith *et al.*, 2011), and the evaluation of the training with paid caregivers in residential aged care facilities (Broughton *et al.*, 2011). Preliminary power analyses for the whole project based on published effect size and standard deviation scores found in communication (Bourgeois *et al.*, 2001) burden and behavior change literature (Teri *et al.*, 2005) indicated that approximately 50 participants would be required in each group. Data collection continued for as long as project resources allowed. The current study involved evaluating the effect of training on the family caregivers of people with dementia who live in their own home (as opposed to a residential care facility). Conversations between the dyads, which allow exploration of the application of taught strategies, were also collected at each timepoint, but analysis and description of these are beyond the scope of the current paper and will be reported elsewhere.

The study was approved by the Human Research Ethics Committees of The University of Queensland, as well as a local community nursing and domiciliary service provider. All dyads (caregiver and person with dementia) provided

written informed consent. The legally authorized guardian provided written informed consent on behalf of the person with dementia and assent was obtained from all participants.

Participants

Informal caregivers were recruited through local community organizations (e.g. dementia support groups and agencies providing nursing and domiciliary services) and newspaper advertisements. Caregivers were required to live with and be the primary caregiver of a person with a medically diagnosed dementia, including Alzheimer's disease. The person with dementia needed to have sufficient communication to provide responses to direct assessment measures. Gross levels of cognitive functioning in both caregivers and care recipients were screened using the Mini-Mental State Examination (MMSE; Folstein *et al.*, 1975), a widely used cognitive screening tool. Data collection took place in participants' homes, between July 2009 and February 2011.

Outcome Measures

CAREGIVERS

Caregivers provided demographic information for themselves and the care recipient, including age, gender, educational level, relationship to the person with dementia, and health. They also completed outcome measures related to the caregiving experience, including an assessment of knowledge of strategies for supporting communication and memory in dementia, a measure of caregiver burden, a measure of positive aspects of caregiving, and ratings of problem behaviors encountered. They also completed a measure of depression on behalf of the care recipient. Those receiving the training program provided feedback on their satisfaction and suggestions for the program and completed the knowledge of strategies assessment one additional time, immediately after training. All instruments used in the study were either developed or adapted for the study (i.e. the demographic questionnaire, assessment of knowledge, and faces scale) or had been previously used in dementia research and possessed well-established psychometric properties.

KNOWLEDGE OF SUPPORT STRATEGIES: COMMUNICATION AND MEMORY SUPPORT IN DEMENTIA

The Communication and Memory Support in Dementia (CMSD) knowledge test was designed to assess caregivers' knowledge of strategies to support memory and communication in dementia. This

test was designed to cover a range of strategies congruent with those covered in the training, but did not require knowledge exclusive to the training materials. The CMSD was divided into two sections: Communication and Memory. The participants were required to provide a total of 17 brief responses on practical ways to facilitate communication and memory. The communication items included, for example: *What are the three ways of getting the person's attention before you start speaking?* The memory items included, for example: *The person keeps misplacing his/her glasses. What could you do to help?* The CMSD responses were deidentified and blind-marked by a researcher unaware of the identity or group of the caregiver, and each response was scored according to pre-specified criteria. The maximum obtainable score was 17, with higher scores indicating greater knowledge. This instrument had previously been used successfully with caregiving staff undergoing the same training (Broughton *et al.*, 2011).

EXPERIENCE OF CAREGIVING:

CAREGIVER BURDEN

The short version of the Zarit Caregiver Burden Interview (Zarit *et al.*, 1980; ZBI: Bedard *et al.*, 2001) was used to measure the level of burden caregivers experience when caring for person with dementia. The ZBI is a self-report scale with a maximum obtainable score of 48; higher scores indicate greater burden. The questionnaire investigates the extent to which caregivers of people with dementia feel burdened by their role as caregiver, and has been shown to have good internal consistency (0.83–0.92) (Hebert *et al.*, 2000; reliability: Bedard *et al.*, 2001) and validity (Hebert *et al.*, 2000).

EXPERIENCE OF CAREGIVING:

POSITIVE ASPECTS OF CAREGIVING

The Positive Aspects of Caregiving (PAC) questionnaire (Tarlow *et al.*, 2004) was used to measure caregivers' positive appraisals and satisfaction with aspects of their caregiving experiences. The PAC is a self-report measure with a maximum obtainable score of 45; higher scores indicate high levels of caregiver satisfaction. This questionnaire was specifically developed for use with people who provide care to people with dementia, and demonstrates moderate to high convergent validity (Cronbach's $\alpha = 0.64$ – 0.94) and high internal consistency reliability (Cronbach's $\alpha = 0.89$) (Tarlow *et al.*, 2004).

EXPERIENCE OF CAREGIVING: REVISED
MEMORY AND BEHAVIOR PROBLEMS
CHECKLIST (RMBPC)

The Revised Memory and Behavior Problems Checklist (RMBPC) is a measurement tool listing 24 observable, problematic behaviors commonly associated with dementia (Teri *et al.*, 1992). It measures both the frequency of the behaviors in the past week (on a five point scale) and the impact on the caregiver via their reaction. Higher scores on the frequency scale indicate more frequent behavior, and higher scores on the reaction scale indicate higher levels of caregiver distress. The behaviors are grouped into three subscales: memory, disruption, and depression. The scale has good overall reliability (0.84–0.9) (Teri *et al.*, 1992) and a more recent study has shown evidence for the convergent and discriminant validity (Roth *et al.*, 2003), as well as the suitability of the three subscales via factor analysis (Roth *et al.*, 2003).

DEPRESSION FOR PERSON WITH DEMENTIA:
CORNELL SCALE FOR DEPRESSION IN
DEMENTIA (CSDD)

The Cornell Scale for Depression in Dementia (CSDD) measures aspects of depression including mood-related signs, changes to behavior, and physical signs across 19 items (Alexopoulos *et al.*, 1988). Although it was developed to be administered following observation, and then after two interviews (one with the family member and one with the person with dementia), in this study, only the family member was interviewed to reduce participation burden. A higher score indicates a higher level of depressive symptomatology (Alexopoulos *et al.*, 1988; Royal Australian College of General Practitioners, 2006). The scale has been validated for use for both people with and without dementia and has reasonable inter-rater reliability (weighted $\kappa = 0.67$) and internal consistency (coefficient $\alpha = 0.84$; Alexopoulos *et al.*, 1998)

TRAINING SURVEY: SATISFACTION AND
SUGGESTIONS

Surveys about the training experience were completed by the training group immediately after training and at three months follow-up. The surveys, developed for the study and also used with the staff evaluation (Broughton *et al.*, 2011), consisted of questions to be answered on 3-point Likert scales, with an option for caregivers to write additional comments about their experiences and any suggestions for improvement.

Person with dementia

FACES SCALE FOR WELL-BEING

There was a need to measure the current well-being or mood of the person with dementia directly. There was concern about the potential participation burden and validity if a standard well-being or depression scale was used. Given the abstract nature of many measures of subjective well-being and their usual requirement of recall of feelings during the past week or longer length of time (Bowling, 2005), a simpler method was required that focused on simple language and immediate feelings. A 5-point Likert scale was developed using faces ranging from unhappy to happy, with the anchors 1 = very good, 3 = neutral, and 5 = very bad. The participants were asked to point to the faces to indicate how they were feeling at the moment. This scale has not been validated. The use of face scales and single items measures of current status have been used previously, most commonly in the areas of pain and mood measurement (Lorish and Maisiak, 1986) and with participants with dementia, although in the instance of pain, only moderate reliability was found (Pauteux *et al.*, 2005).

Procedure

Caregiver Intervention

TRAINING GROUP

At baseline, participants in the training group completed the demographic questionnaire, MMSE, ZBI, PAC, RMBPC, CSDD, and the CMSD. Within one week of baseline, caregivers participated in two 45-minute training sessions based on the RECAPS memory support strategies and the MESSAGE communication support strategies described by Smith and colleagues (2011). The training DVD was delivered to each caregiver individually at their home. The first training session consisted of presentation of the MESSAGE training (communication strategies) DVD, while the second training session consisted of presentation of the RECAPS training (memory strategies) DVD. Training sessions were overseen by two researchers with either psychology or speech pathology qualifications. The research staff were present to monitor how the training was received, encourage discussion, answer any questions the caregivers had regarding the training, and collect outcome measure data.

To assist the caregivers in remembering the training information, they kept the DVDs and were each given a summary booklet and a reminder card listing the strategies. Immediately after each training session, caregivers completed the relevant section

of the CMSD. After the completion of training, the caregivers also completed the training satisfaction and suggestions survey. At 3-month follow-up, caregivers completed the outcome measures ZBI, PAC, CSDD, RMBPC, CMSD, as well as the follow-up training satisfaction and suggestions survey. The person with dementia completed the faces well-being scale.

CONTROL GROUP

Similarly, the caregivers in the control condition completed the demographic questionnaire, MMSE, ZBI, PAC, RMPBC, and the CMSD at baseline and the ZBI, PAC, RMBPC, and the CMSD again at 3-month follow-up. For ethical reasons, the training DVD was given to the caregivers in the control group after the follow-up assessment was completed.

Statistical analysis

Analyses were conducted using STATA version 10 (StataCorp, 2007). Data were examined and no outliers were identified. The distributions of data were examined using histograms, plots, and tests of skewness and kurtosis (Portney and Watkins, 2009; Juul and Frydenberg, 2010). Differences in the demographic characteristics between the training and control group were analyzed using independent groups *t*-tests or Mann-Whitney U tests for continuous data and Pearson's χ^2 or Fisher's exact test for categorical data (Portney and Watkins, 2009; Juul and Frydenberg, 2010). Data from outcome measures were not adjusted for potential differences between the groups at baseline, however, analyses examined changes in scores over time, between groups rather than absolute scores.

Where outcome variables had normal distributions or data could be transformed into a normal distribution, mixed-design ANOVAs were used to analyze change between baseline and follow-up (repeated measure) and between groups. ANOVAs included only group, time, and interaction between group and time, as sample size and distribution did not allow for inclusion of other potentially relevant covariates. Where distributions could not be normalized with transformation, data were dichotomized according to some improvement occurred between baseline and follow-up, and analyzed using logistic regression, where there were sufficient cases, or χ^2 where there were not (Portney and Watkins, 2009). Differences in knowledge scores were compared for the training group between baseline and immediately after training using Wilcoxon matched pairs signed rank tests.

As the literature suggests that a marked worsening in the dementia severity, the health of the person with dementia, or the health of the caregiver could affect the experience of caregiving (e.g. Schulz and Martire, 2004), these factors were included in the logistic regression models. Due to the small sample size, there was a limitation to the number of variables that could be included within a logistic regression model. Therefore, a dichotomous health change scale, which indicated whether or not the dyad had experienced a worsening in severity of dementia or a decline in the overall health of either the caregiver or the person with dementia, was included in logistic regression models. Caregiver satisfaction and feedback data were described using percentages.

Setting the α for the study involved consideration of the fact that multiple comparisons were used on the same data in this study, which would generally lead to using a more conservative α to avoid Type I errors. However, the study also involved exploration of a new training program with a small clinical sample. This meant that it was equally important to avoid Type II errors, possibly missing information about the potential effectiveness of the program. Therefore, Bonferroni's adjustment (Portney and Watkins, 2009) was made to the α level for statistical significance, noting 13 analyses on outcomes likely to be correlated (0.05/13), setting it at 0.00385 throughout. *p* values will be reported for each analysis to allow the reader to evaluate the results. Given the exploratory focus of the current analysis, analyses that result in *p* values between 0.00385 and 0.005 will also be described, explored, and discussed.

Results

Participants

Forty-one dyads volunteered to participate in the study. Five dyads were excluded for the following reasons: the person with dementia being unable to verbally participate (two dyads), the person not having dementia as the primary diagnosis (e.g. brain tumor; two dyads), or the carer not living with the person with dementia (one dyad). Thirty-six dyads completed baseline measures. Seven dyads withdrew prior to follow-up due to ill health (four dyads), death (one dyad), and displacement by a natural disaster (two dyads). The final sample consisted of 29 dyads, 13 dyads in the training group and 16 dyads in the control group.

CAREGIVERS

The caregiver sample was predominantly female (83%, $N=24$), most commonly spouses (76%,

$N=22$), reported good to excellent health, and scored in the cognitively intact range on the MMSE (Median 30 out of a possible 30). Demographic details are reported in Table 1, as are statistical comparisons on baseline demographic variables between the training and control groups. As a continuous variable, differences between the groups in age approached significance ($t(27) = 2.14$, $p = 0.041$), with the caregivers in the training group tending to be slightly older than the control group. When age was dichotomized at 70 years according to the distribution of data, to allow potential inclusion in analyses to account for baseline demographic differences between groups, the proportion of older and younger caregivers did not differ significantly between the groups, and therefore it was not required to be included within the models.

PEOPLE WITH DEMENTIA

Similarly, at baseline there were no significant differences in the demographic characteristics of people with dementia receiving training compared to those in the control condition (Table 1). The participants with dementia were predominantly male, with a range of types of dementia and MMSE scores reflecting moderate to severe cognitive impairment ($Mdn = 17$).

Outcomes

Summary scores and the statistical comparisons between groups over time are summarized in Table 2 for knowledge, Table 3 for experience of caregiving outcomes, and Table 4 for outcomes for the person with dementia.

CARER: KNOWLEDGE OF STRATEGIES SCORES (CMSD)

Training and control group participants were compared on their CMSD scores at pre- and 3-month post-training. Training group participants also had CMSD scores collected immediately post-training. These were compared statistically to pre-scores for the training group.

For the total knowledge of strategies scores, there were significant differences between pre- and immediately post-training scores for the training group ($z = -3.19$, $p = 0.0014$). To evaluate whether or not participation in the training affected knowledge of strategies scores, a repeated measures ANOVA was conducted on knowledge scores, which is summarized in Table 2. The group by time interaction was significant ($p = 0.0011$), while the group main effect approached significance ($p = 0.0165$), indicating that while both groups changed over time, the rate and amount of change differed between groups. The effect size for the

ANOVA was calculated for the interaction between group and time ($\eta^2 = 0.134$), indicating a medium effect (Cohen, 1992). Improvement in knowledge scores was calculated as any increase from the baseline score. The training group showed a median improvement of four points and 85% of the group showed improvement from baseline, while the control group showed a significantly lower amount of improvement (median of 0.5 points, with 56% of the group improving from baseline) in their knowledge of strategies. These results support the effect of the training program.

Experience of caregiving: caregiver burden

Neither the main effects in the ANOVA for group or time nor the interaction between group and time showed significant differences in changes to ZBI scores ($p = 0.447$). While 62% of the training group, compared to 38% of the control group, experienced improvements (reduction) in burden scores, this difference was not statistically significant. A small effect size was calculated ($\eta^2 = 0.011$).

Experience of caregiving: positive aspects of caregiving

The data from PAC were collapsed into categorical variables of improved or not improved and a logistic regression model was fitted. The logistic regression model indicated an improvement approaching significance in the perception of caregiver experiences in the treatment group compared to the control group ($p = 0.039$). Nearly half (46%) of the training group, compared to 13% of the control group, showed any improvement. The group factor approached significance in predicting improvement ($p = 0.039$), and the health changes variable, also included in the model, did not predict improvement significantly ($p = 0.101$). Adjusted R^2 for the model was 0.11, indicating a relatively low proportion of variance was explained by participation in training and health changes.

Experience of caregiving: revised memory and behavior problems checklist (RMBPC)

ANOVA analysis of the frequency of disruptive behaviors showed that the interaction between group and time had an effect approaching significance ($p = 0.028$), while group alone did not have a significant effect ($p = 0.599$), the effect size for the group and time interaction was small to medium ($\eta^2 = 0.0428$) (Cohen, 1992). Both groups had a median score of 3 at baseline, which was maintained for the training group but increased by 2 points (worsened) for the control group. χ^2 square analysis on dichotomized reaction data

Table 1. Participant demographic variables of caregivers and people with dementia (PWD): comparison between training and control groups

DEMOGRAPHIC VARIABLE	ALL PARTICIPANTS <i>n</i> = 29 dyads	TRAINING GROUP <i>n</i> = 13 dyads	CONTROL GROUP <i>n</i> = 16 dyads	STATISTICAL COMPARISON BETWEEN TRAINING AND CONTROL
Gender of caregiver	17.24% male (5)	30.77% male (4)	6.25% male (1)	<i>p</i> = 0.144 ^a
Age of caregiver	Mean 68.72; SD 9.91	Mean 72.85, SD 8.34	Mean 65.38, SD 10.07	
% aged 70 years +	51.72%	69.23%	37.50%	$\chi^2(1) = 2.89$; <i>p</i> = 0.09
Years of education of caregiver	Mdn 11.00, IQR 10.00–14.00	Mdn 12.00; IQR 10.00–15.00	Mdn 11.00; IQR 10.00–13.00	<i>z</i> = 0.59 ^b ; <i>p</i> = 0.56
Relationship to the PWD				
Spouse	75.86% (22)	84.62% (11)	68.75% (11)	<i>p</i> = 0.41 ^a (Spouse vs. other)
Offspring	13.80% (4)	7.69% (1)	18.75% (3)	
Parent	3.45% (1)	7.69% (1)	0% (0)	
Friend	6.90% (2)	0% (0)	12.50% (2)	
Overall health of caregiver				
Poor	0% (0)	0% (0)	0% (0)	<i>p</i> = 1.00 ^a (dichotomized scores)
Fair	13.79% (4)	15.38% (2)	12.50% (2)	
Good	58.62% (17)	53.85% (7)	62.50% (10)	
Excellent	27.59% (8)	30.77% (4)	25.00% (4)	
Gender of PWD	74.41% male (21)	76.92% male (10)	68.75% male (11)	<i>p</i> = 0.697 ^a
Age of PWD	Mean 76.93; SD 8.94	Mean 75.85; SD 6.77	Mean 77.81; SD 10.53	<i>t</i> (27) = 0.58; <i>p</i> = 0.57
Years of education of PWD	Mean 11.07; SD 2.75	Mean 11.00; SD 2.55	Mean 11.13; SD 2.99	<i>t</i> (27) = 0.12; <i>p</i> = 0.91
Overall health of PWD				
Poor	6.90% (2)	15.38% (2)	6.25% (1)	<i>p</i> = 0.433 ^a (dichotomized scores)
Fair	17.24% (5)	38.46% (5)	18.75% (3)	
Good	41.38% (12)	38.46% (5)	43.75% (7)	
Excellent	34.48% (10)	7.69% (1)	31.25% (5)	
Diagnosis of PWD				
Alzheimers	41.38% (12)	38.46% (5)	43.75% (7)	$\chi^2(1) = 0.083$; <i>p</i> = 0.774
Vascular	13.79% (4)	7.69% (1)	18.75% (3)	
Frontotemporal	6.90% (2)	15.38% (2)	0% (0)	
NOS	31.03% (9)	30.77% (4)	31.25% (5)	
Other	6.90% (2)	7.69% (1)	6.25% (1)	
MMSE score of PWD at baseline	Mdn 17.00; IQR 7.00–22.00	Mdn 18.00; IQR 14.00–25.00	Mdn 16.50 IQR 7.00–21.00	

a = Fisher's exact; b = Mann Whitney U

Table 2. Comparison of knowledge of strategies between training and control groups

OUTCOME	TRAINING GROUP <i>n</i> = 13	CONTROL GROUP <i>n</i> = 16	STATISTICAL COMPARISON
Knowledge of Strategies:			
Total			
Pre	Mdn 7.00; IQR 6.00–7.50	Mdn 6.50; IQR 5.00–7.75	^a Group × time $F(2) = 8.83$; $p = 0.0011^{**}$
Immediately post training	Mdn 10.50; IQR 9.00–13.00		Group $F(1) = 6.53$; $p = 0.0165$
Post	Mdn 9.00; IQR 8.00–11.50	Mdn 5.75; IQR 4.75–8.25	

a = Statistical test: Repeated measures ANOVA ** indicates $p < 0.00385$, statistical significance.

Table 3. Comparison of experience of caregiving outcomes between training and control groups

OUTCOME	TRAINING GROUP <i>n</i> = 13	CONTROL GROUP <i>n</i> = 16	STATISTICAL COMPARISON
Caregiver Burden			
Pre	Mean 15.85; SD 8.85	Mean 14.50; SD 9.29	^a Group × time $F(2) = 0.83$; $p = 0.447$
Post	Mean 14.38; SD 9.47	Mean 16.69; SD 9.29	Group $F(1) = 0.02$; $p = 0.879$
Positive Aspects of Caregiving			
Pre	Mdn 31.00; IQR 27.00–37.00	Mdn 32.00; IQR 23.00–39.50	^c Group: OR = 0.12, $\beta = -2.13$, $z = -2.06$, $p = 0.039^*$
Post	Mdn 30.00; IQR 26.00–35.00	Mdn 34.00; IQR 16.00–38.00	Health changes: OR = 8.03, $\beta = 2.08$, $z = 1.64$, $p = 0.101$.
Problem Behaviors			
Memory problems – frequency			
Pre	Mdn 18.00; IQR 16.00–25.00	Mdn 22.00; IQR 13.50–24.50	^b $\chi^2(1) = 0.22$; $p = 0.638$
Post	Mdn 19.00; IQR 11.00–26.00	Mdn 23.50; IQR 15.00–26.50	
Memory problems – reaction			
Pre	Mdn 5.00; IQR 2.00–7.00	Mdn 5.00; IQR 2.50–8.50	^d $p = 0.647$
Post	Mdn 4.00; IQR 2.00–7.00	Mdn 8.00; IQR 2.00–14.50	
Disruptive behaviors – frequency^e			
Pre	Mdn 3.00; IQR 0.00–6.00	Mdn 3.00; IQR 1.00–8.00	^a Group × time $F(2) = 4.08$; Partial SS = 3.28; $p = 0.028^*$
Post	Mdn 3.00; IQR 1.00–7.00	Mdn 5.00; IQR 2.50–8.50	Group $F(1) = 0.28$; Partial SS = 61.80; $p = 0.599$
Disruptive behaviors – reaction			
Pre	Mdn 3.00; IQR 0.00–5.00	Mdn 1.50; IQR 0.00–5.00	^d $p = 0.374$
Post	Mdn 3.00; IQR 1.00–4.00	Mdn 3.50; IQR 1.00–6.00	
Depressive behaviors – frequency			
Pre	Mdn 2.00; IQR 0.00–7.00	Mdn 7.00; IQR 3.00–10.00	^c Group: OR = 6.99; $\beta = 1.95$; $z = 2.26$, $p = 0.024^*$
Post	Mdn 7.00; IQR 2.00–11.00	Mdn 4.00; IQR 2.50–8.00	Health changes: OR 2.14, $\beta = 0.76$; $z = 0.86$, $p = 0.412$
Depressive behaviors – reaction			
Pre	Mdn 1.00; IQR 0.00–6.00	Mdn 2.50; IQR 0.50–6.00	^b $\chi^2(1) = 1.09$; $p = 0.296$
Post	Mdn 2.00; IQR 0.00–8.00	Mdn 2.00; IQR 0.50–5.00	

a = Statistical test: Repeated measures ANOVA b = Statistical test: Pearson’s χ^2 c = Statistical test: Logistic regression
d = Statistical test: Fisher’s exact χ^2 e = data transformed (square root) *indicates p values between 0.05 and 0.00385, approaching statistical significance

indicated that there were no significant differences between groups for whether improvement occurred in caregiver reaction to disruptive behaviors ($p = 0.374$; $\phi = 0.140$).

The frequency of memory impairment and depressive behavior subscales were dichotomized

due to non-normality. χ^2 analyses indicated no statistical differences between groups over time for the memory subscales, on either frequency or carer reaction data. The effect sizes were calculated for memory problem frequency ($\phi = 0.087$) and reaction to memory problems ($\phi = 0.0052$),

Table 4. Comparison of outcomes for person with dementia between training and control groups

OUTCOME	TRAINING GROUP <i>n</i> = 13	CONTROL GROUP <i>n</i> = 16	STATISTICAL COMPARISON
Depression (Cornell)			
Pre	Mdn 4.00; IQR 3.00–8.00	Mdn 6.50; IQR 4.00–9.00	^a $\chi^2(1) = 0.003; p = 0.958$
Post	Mdn 6.00; IQR 3.00–7.00	Mdn 6.50; IQR 3.00–9.00	
Well-being (Faces scale)			
Pre	Mdn 2.00; IQR 2.00–3.00	Mdn 2.00; IQR 1.00–2.00	^b $p = 0.217$
Post	Mdn 2.00; IQR 1.00–2.00	Mdn 2.00; IQR 1.00–3.00	

a = Statistical test: Pearson's χ^2 b = Statistical test: Fisher's exact χ^2

indicating a weak effect. A logistic regression model was fitted for the dichotomized depressive behaviors data. The group variable approached significance in influencing whether or not improvement occurred ($p = 0.024$). The training group showed a median increase (worsening) of two points, whereas the control group showed a median reduction (improvement) of two points. The health changes variable was included in the model, and did not significantly predict improvement ($p = 0.412$). Adjusted R^2 was 0.173 indicating a fairly low proportion of variance was accounted for by participation in training and health changes. χ^2 analyses indicated there were no significant differences between the groups in whether improvement occurred in caregiver reaction to depressive behaviors ($p = 0.296; \phi = 0.194$).

Given the unexpected direction of the changes to depressive behaviors, *post hoc* analyses were conducted on the depressive behavior frequency subscale to identify as to which behaviors were differing in frequency between the groups. Subscale items were categorized according to whether they were related to expression via verbal communication or by other observed behaviors. In the depressive behaviors scale, those relating to direct communication included, for example, "Expressing feelings of hopelessness or sadness about the future" and "Comments about feeling like a failure or about not having any worthwhile accomplishments in life." Those relating to other observed behavior included, for example, "appears anxious or worried" and "crying and tearfulness." Change scores (from pre to post) on communication-related items on the depressive subscale were compared between the groups using a Mann-Whitney U test. Findings indicated that differences approaching significance existed between the groups for communication-related depressive behaviors ($z = 2.50, p = 0.0126$), but not for the other observed depressive behaviors ($z = 1.86; p = 0.0623$). The training group showed a median increase of 1, and the control group

showed a median decrease of 0.5 in frequency of communication-related depressive behaviors. The pattern of change for non-communication-related depressive behaviors was different, with the intervention group showing a median change of 0, and the control group showing a median decrease of 1.

Cornell depression scale in dementia

Data were dichotomized, and Pearson's χ^2 analysis was conducted. The results indicated no significant difference between the groups and a weak effect size ($p = 0.958; \phi = 0.01$), with similar rates of participants experiencing improvement for the training group (38%) and the control group (37%). A cut-off score of 8 or more was used as indicating clinically important levels of depressive symptomatology (Royal Australian College of General Practitioners, 2006). The control group had 38% ($n = 6$) of participants with scores above the cut-off at both time points, whereas the training group had 31% ($n = 4$) at pre-training and 23% ($n = 3$) after training.

Well-being faces scale

Data were dichotomized and a Fisher's exact χ^2 analysis was conducted. Although it appeared that more of the training group (44%) showed improved subjective well-being scores between baseline and follow-up compared to the control group (18%), this difference did not reach significance ($p = 0.217; \phi = 0.285$).

Summary

A significant difference and medium effect size was found between the training and control groups over time in knowledge of memory and communication support strategies ($p = 0.0011$). Differences approaching significance were found in frequency of depressive behaviors ($p = 0.024$),

frequency of disruptive behaviors ($p=0.028$), and positive aspects of caregiving ($p=0.039$), though effect sizes were small. No significant differences were found in caregiver burden, caregiver reactions to any categories of problem behaviors, frequency of memory problems, depression, and well-being.

Training: satisfaction and suggestions

The satisfaction and suggestions survey was administered immediately post-training and at follow-up to the caregivers in the training group. Positive results were obtained on all survey questions at both time points. Specifically, the training was perceived to be very useful (85%, $n=11$) or fairly useful (15%, $n=2$). The usefulness of the training was further supported by the finding that all of the carers would recommend the training to others (100%, $n=13$) and that 85% ($n=11$) reported they had learned a lot from the program. At follow-up, participants continued to feel positive about the program: 100% ($n=13$) of the group indicated it was fairly or very helpful, and all had found it easy or moderately easy to remember the strategies (100%, $n=13$). In addition, 92% ($n=12$) reported that they had been able to apply the strategies either sometimes or frequently in their everyday setting.

The additional written comments made by the 13 home caregivers were analyzed inductively for content (Elo and Kyngas, 2008) and identified the following positive aspects of the training. Participants commented that the way in which the training was presented was accessible and relevant, particularly through the use of role plays and examples. The program was perceived as positive, clear, informative, and useful, with one participant describing it as “useful, enlightening and easy to follow.” The participants particularly highlighted a feeling of increased awareness following participation, and suggested that they felt they now had options. As one participant reported, “It made me aware that there are other ways of doing things to reduce stress on both people.” Feedback also referred to the issue of the timing of the delivery of the program, with participants indicating that it should be available to caregivers as early as possible.

Discussion

This study explored the effect of a training program on a small sample of informal, community caregivers. The findings indicated that the RECAPS memory strategies in dementia and MESSAGE communication strategies in dementia, when presented in a brief DVD-based training program, led to change in the experience of caregiving

for carers of people with dementia. Specifically, those completing the program had significantly more knowledge of facilitative strategies. There was also a trend toward observing less frequent disruptive behaviors, increased perceptions of positive aspects of caregiving, and reporting more frequent depressive behaviors, particularly those communicated verbally. There were no significant differences in depression on the Cornell Scale of Depression in Dementia, well-being, caregiver reaction to problem behaviors, frequency of memory problems, or caregiver burden. Caregivers participating in the program were highly satisfied with the training and reported finding it useful and easy to apply. Given the sample size, caution should be taken when applying the findings to the broader informal caregiving population.

Before discussing the implications of the findings of this study, it is important to examine the participant population compared to the broader caregiving population and those involved in other dementia caregiving research. National Australian statistics on dementia caregiving indicate that most family caregivers are older, female, and a spouse or partner of the person with dementia (Australian Institute of Health and Welfare, 2007b), which is congruent with the sample of the current study and other studies of caregiver interventions (Brodaty *et al.*, 2003; Teri *et al.*, 2005).

The characteristics of the participants with dementia in the current study differed somewhat from the national statistics, which state that 64% of people with dementia are female and 81% are aged 75 years or older (Australian Institute of Health and Welfare, 2007b). While the age characteristics were comparable, 74% of the current sample were male. This is likely to be a reflection of the study requirement that participants co-resided and lived in the community rather than residential care settings, along with the high proportion of female spousal caregivers who participated. The severity of dementia, as indicated by MMSE scores (Mdn 17), suggests that most participants had a moderate level of dementia, (Pernecky *et al.*, 2006), again reflecting the community-dwelling sample.

Improvements in knowledge, disruptive behaviors, and positive aspects of caregiving

The training program led to significant improvements in knowledge, and trends towards improvement in frequency of disruptive behaviors and positive perceptions of caregiving. Participation in the training significantly improved the caregivers' knowledge of both memory and communication-related strategies. It is likely that having a broader awareness of strategies could enhance feelings of

competence and self-efficacy in the caregiver role (de Vugt *et al.*, 2004; Lewis *et al.*, 2010). Self-efficacy is believed to play a key role in determining whether caregivers are able to perceive positive aspects of caregiving (Semiatin and O'Connor, 2012).

Enhancing caregivers' knowledge of strategies thus may improve outcomes in a number of ways. Applying the strategies may lead to more successful management of daily interactions and care tasks, thereby reducing frequency of conflict and disruptive behaviors including aggression or distress (de Vugt *et al.*, 2004; Lewis *et al.*, 2010). The psychoeducational approach taken in the training materials, which involved explaining both what the strategies were and why they would be helpful, could also act to change perceptions of challenging behaviors (Lawlor, 2002), as might be understanding why behaviors occur (Lawlor, 2002; Lewis *et al.*, 2010). Finally, feeling more confident about having options could enhance self-efficacy in the caregiving role, with associated impact on burden, depression, and positive perceptions of caregiving (Gallagher *et al.*, 2011; Semiatin and O'Connor, 2012), as suggested by the trend in the current study of improvement in positive aspects of caregiving. Future research could measure caregiver self-efficacy and investigate the potential relationships between care recipient needs, self-efficacy, burden, and caregiver well-being (Semiatin and O'Connor, 2012).

The training did not significantly change memory-related challenging behaviors, caregiver reactions to problem behaviors, or caregiver burden. This is not altogether surprising, as it is unlikely that a caregiver training program will substantially change memory-related functioning for people with dementia, particularly in only a 3-month period. Other dementia caregiver research has also indicated that caregiver burden may be a construct that is relatively insensitive to change (Cooke *et al.*, 2001). These measures may therefore not be the best indicators of effectiveness for brief caregiving training programs.

Depressive behaviors, depression, and well-being

While most differences between groups in the current study reflected expected changes to the caregiving experience, the increase in frequency of depressive behaviors was unexpected. When introducing a new intervention or training method, a cautious approach is important in ensuring that the intervention itself is not causing harm. Thus the finding that the training group recorded a significant

increase in frequency of depressive behaviors is examined in more detail.

It is possible that a program training the caregiver in strategies to alleviate difficulties related to dementia could indirectly make the care recipients more aware of their limitations. Increased awareness of the losses associated with dementia could act to heighten grief related to the illness process (Rentz *et al.*, 2005). While the experience of grief and mourning for people with dementia is not well understood (Gataric *et al.*, 2010), it could present in a similar way to the depressive behaviors described in the RMPBC subscale (Rentz *et al.*, 2005). In a study of levels of depression for people with dementia in residential care settings, the direct communication of grief and dementia-related loss by residents, as noted by staff, indicated the possible presence of depression (Snowdon and Fleming, 2008).

Being aware of indicators of depression can be challenging, particularly with people with dementia (Snowdon and Fleming, 2008). Bourgeois and colleagues found that providing communication training to care staff in a residential care setting improved the accuracy of the staff's rating of residents' depression (Bourgeois *et al.*, 2001), making ratings more aligned with those of the residents themselves. It is therefore likely that the RECAPS and MESSAGE training enhanced the caregivers' awareness of and sensitivity to expressions of sadness and depression. This would suggest that the reported increase in frequency of depressive behaviors may reflect increased sensitivity to their expression rather than an absolute change in behaviors.

This is supported by the finding that although carers were reporting increased frequency of behaviors, they were not reporting increased distress associated with the behaviors. Furthermore, the direct measure of well-being used with the person with dementia did not show any significant changes. This suggests that there was not a substantial worsening in mood following training, but rather there was an increase in recognition of pre-existing depressive behaviors, that did not seem to cause increased distress for either the person with dementia or the caregiver.

It should be particularly noted that although frequency of depressive behaviors showed a significant difference between the groups, depression measured on the Cornell Depression Scale did not. This suggests that the scales, both scored by the caregivers, may be measuring somewhat different constructs in our sample.

Due to its focus on direct expression of behaviors, the impact of the quality of communication between the caregiver and care recipient could influence

RMPBC scores and not Cornell scores. The *post hoc* analysis of subscale items indicated an increase for the training group in depressive behaviors expressed through verbal communication, but no change in other depressive behaviors. This would suggest that the observed increase in frequency of depressive behaviors in the care recipient may relate more to increased quality of communication between the caregiver and recipient, rather than solely a change in mood. This could relate to enhanced sensitivity and understanding of verbal communication on the part of the caregiver, as was a focus of the training. It may also suggest increased expression on the part of the person with dementia, possibly due to a more supported communication environment, or a combination of these factors.

After examining the nature of the results for depressive behaviors, depression, and well-being, it seems that while caregivers who have undergone the training report more frequent depressive behaviors, this may be more related to improved communication and sensitivity to direct communication of depressive ideas. As this study investigated a new training tool, future research could monitor its impact with more objective measures of depression, including direct measures from the person with dementia (Alexopoulos *et al.*, 1988) and observational measures of mood and well-being (Ready and Ott, 2003). Although the increased frequency of depressive behaviors did not apparently cause heightened concern for caregivers, nor show an associated decrease in well-being for the person with dementia, those using the training approach may wish to educate carers about the possibility of the caregiver noting more frequent expressions of mood or ideational disturbance after training, and how to cope with this. Responding carefully and appropriately to their family members' communication of depressive ideas may facilitate ongoing communication and feelings of support (Rentz *et al.*, 2005) and enhance positive and reciprocal communication, which has been shown to be beneficial in protecting caregiver well-being (Braun *et al.*, 2010). They may also wish to provide information about approaches to monitoring depression and facilitating the mourning process that can be associated with dementia (Gataric *et al.*, 2010).

Satisfaction with the training

The findings indicate that participants were highly satisfied with the training and found it relevant and easy to apply. It is known that satisfaction ratings can be influenced by a social desirability bias and that participants may be reluctant to provide negative feedback, particularly when a service has

been provided. However, considering satisfaction and providing opportunities for making suggestions is regarded as an important way to evaluate and develop health-related services, particularly when using a client-centered approach (Hoffman and McKenna, 2006). The high levels of satisfaction and positive feedback support the use of the training program in its current form and are likely to reflect the application of recommended strategies for caregiver education interventions (Smith *et al.*, 2011). The training program was brief and did not require leaving the home or arranging alternative care for the care recipient (Lewis *et al.*, 2010), and contained research-based practical strategies focused on areas of caregiver concern (Rosa *et al.*, 2010; Smith *et al.*, 2011).

Limitations

In considering the potential application of findings of a research project, the limitations should be acknowledged. This study involved a smaller sample than aimed for due to difficulties in recruiting and maintaining participation of this clinical sample and is therefore likely to be underpowered. Given the importance of meeting the needs of people with dementia and their caregivers, carer intervention studies have been published with relatively small participant numbers, enabling systematic reviews and meta-analyses to be conducted (e.g. Brodaty *et al.*, 2003; Pinguart and Sörensen, 2006). The design of the study did not incorporate a control training option to provide comparable attention to that received by the training group, which means the results may reflect a possible Hawthorne effect. The current study also used a volunteer sample in metropolitan and regional areas of South East Queensland, and could only involve co-resident, informal caregivers of people with dementia who were able to communicate in English. This meant that it was unable to evaluate the effectiveness of the training for caregivers who do not co-reside, those living in rural areas, or communicating in languages other than English. It is also possible that through use of a volunteer sample, participants may have tended to be caregivers with sufficient time and energy to participate in a research study, and that some subgroups of caregivers were therefore not included. The study also used some unvalidated measures to attempt to measure variables specific to the study (e.g. knowledge test) and to attempt to include a direct perspective from the person with dementia (e.g. faces well-being scale). Future research may seek to validate these measures or explore the validity of a self-assessment of well-being for people with dementia. From the sample size and scope of the current study, it is unknown

whether these findings could be generalized to the wider informal caregiving population.

Future directions

Future research could address the limitations of the current study by involving a larger, broader sample and by monitoring depression, well-being, and depressive behaviors using additional measures. A control training program giving general information about dementia or caregiving should also be incorporated to reduce the likelihood of a Hawthorne effect impacting on outcomes of the study. A larger sample size would also potentially allow inclusion of possibly relevant covariates, such as health status, in models exploring outcomes. Longer term evaluation of the effectiveness of the training, beyond the three months in this study, may also provide a more thorough understanding of how the training may be applied over time and with further progression of the dementia. Future research may expand the focus of the study and apply the training with new caregiving groups. It would be of interest to determine whether the training would be useful and effective for paid caregivers in a community setting. Exploring whether the strategies were directly applied by caregivers within their caregiving tasks and communication with the care recipient will also assist in understanding how training involving strategies may act to improve outcomes for caregivers and care recipients.

At the present time, a revised version of the training DVD is available free of charge via a YouTube channel <http://www.youtube.com/UQDementiaCare>, allowing caregivers and care staff to watch the videos via the Internet. Future research could also investigate the experience and effectiveness of online education and support for caregivers, as a flexible, low-cost way of introducing potential memory and communication strategies.

Conclusions

The MESSAGE and RECAPS DVD-based training in communication and memory strategies for family caregivers of people with dementia significantly improved knowledge of strategies. It also trends toward increasing communication of depressive ideas, decreasing disruptive behaviors, and increasing positive perceptions of caregiving. Satisfaction with the program was high and feedback was positive. This type of brief, strategy-based training for caregivers of people with dementia, though in this study exploratively investigated on a small scale, seems to be effective and to provide real potential for improving the lives

of people with dementia and their family caregivers living at home.

Conflict of interest declaration

Nancy A. Pachana is a Deputy Editor of *International Psychogeriatrics*.

Description of authors' roles

Helen Chenery, Michael Humphreys, Nancy Pachana, Cindy Gallois, Anthony Angwin, David Copland, Gerard Byrne, Rosemary Baker, and Erin Smith-Conway contributed to study design, were involved in supervision of data collection, supervised data analysis and were involved with writing and editing of the paper. Jacki Liddle analyzed data. Jacki Liddle and Erin Smith-Conway conducted the literature review and wrote the paper.

Acknowledgments

The authors gratefully acknowledge the funding for this project provided by the J.O. and J.R. Wicking Trust (managed by ANZ trustees) and the National Health and Medical Research Council (Grant ID:511208). The authors warmly thank Blue Care, Alzheimer's Australia (Qld) and Alzheimer's Association Qld for their collaboration in this project. The authors are grateful to the participants for their time and effort. The authors thank Asad Khan, Statistician at the School of Health and Rehabilitation Sciences, The University of Queensland, for statistical advice. The authors also acknowledge research assistance by Kathryn Havas, Catherine Mak, Katharine Vearncombe, Polly Warburton, Kathryn Healey, and Megan Broughton.

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