

# Effects of combined intervention programmes for people with dementia living at home and their caregivers: a systematic review

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## SUMMARY

**Objective** This study reviews the evidence for effects of combined intervention programmes for both the informal caregiver and the person with dementia.

**Method** Systematic review. Electronic databases and key articles were searched for effect studies of combined programmes, published between January 1992 and February 2005. The resulting 52 reports were scored according to set inclusion criteria.

**Results** Twenty five reports relating to 22 programmes met the inclusion criteria. Various aspects of caregivers' mental health and burden were studied. Best results were obtained regarding general mental health. Other aspects often showed modest and varying results. Caregivers' competence was less often addressed. The effects on the cognitive and physical functioning, behavioural problems and survival of the persons with dementia were modest and inconsistent, whereas their mental health is positively affected and admittance to long stay care is often delayed.

**Conclusion** Combined programmes may improve some, not all, aspects of functioning for caregiver and person with dementia. Care professionals must define their programme goals and target groups before advising their clients on a combined programme. Research may focus on the effects of programmes that were introduced fairly recently and on subgroups of caregivers (female caregivers, depressed caregivers and people with dementia, and minorities). Copyright © 2007 John Wiley & Sons, Ltd.

KEY WORDS — systematic review; caregivers; dementia; combined interventions; effects

## INTRODUCTION

Various studies have shown the negative physical and psychological consequences of caring for a person with dementia (Eagles *et al.*, 1987; Pot, 1997; Adkins, 1999; Cooke *et al.*, 2001; Cuijpers, 2005). Several

studies reviewed the evidence of the impact of programmes designed to prevent the negative consequences of caring for a person with dementia (Bourgeois and Schulz, 1996; Zarit *et al.*, 1999; Cooke *et al.*, 2001; Schulz *et al.*, 2002; Brodaty *et al.*, 2003; Dröes *et al.*, 2004a). The programmes vary in the degree in which the persons with dementia are involved. Interestingly, combined care programmes addressing both the person with dementia and their caregiver have been shown to be most effective with

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respect to the caregiver (Acton and Kang, 2001; Brodaty *et al.*, 2003). An overview of the effects of these combined interventions on both caregiver and person with dementia, however, is missing.

The present study reviews the evidence for effects of combined programmes for both the informal caregiver and the person with dementia.

## METHOD

Medline and Psychinfo were consulted in two search strategies covering the period January 1992 to February 2005. One search strategy focused on single studies of interventions, using the following key words: dementia, family members, caregivers, caregiver burden, support program, training, counselling, care-giving skills, intervention, combined intervention, integrated intervention, *effec\**, *effic\**. It resulted in 268 potentially relevant studies from the Medline database and 115 studies from Psychinfo. A second search strategy focussing on systematic reviews on the effect of programmes aimed at caregivers of persons with dementia or the persons with dementia. This part of the search involved the above databases and the EBM Reviews-Cochrane database of systematic reviews (in English; German; and Dutch) and resulted in 40 abstracts of potentially relevant reviews in Psychinfo and three in Medline. Nineteen reviews discussed one or more studies on the combined interventions for caregivers and persons with dementia living at home (Brodaty and Gresham, 1989; Cuijpers, 1992; Flint, 1995; Bourgeois and Schulz, 1996; Gräsel, 1997; Dunkin and Anderson-Hanley, 1998; Adkins, 1999; Zarit *et al.*, 1999; Gottlieb and Johnson, 2000; Kennet *et al.*, 2000; Roberts *et al.*, 2000; Acton and Kang, 2001; Cooke *et al.*, 2001; Pusey and Richards, 2001; Cummings and Cole, 2002; Flannery, 2002; Schulz *et al.*, 2002; Souder and Beck, 2003; Dröes *et al.*, 2004a).

Secondly, the first two authors scrutinized the resulting studies and any relevant papers from the reference lists. Fifty-two articles or chapters were thus investigated. Inclusion criteria were: intervention aimed at both caregiver and patient (resulting in personal contacts between care professional, caregiver and person with dementia); caregiver and person with dementia living in their own homes; elderly person suffering from dementia; report of effect study. One article, although published before January 1992, was included, as a complementary publication on the same programme that was published between 1992 and 2005 (Brodaty and Gresham, 1989; Brodaty *et al.*, 1997).

Thirdly, both investigators independently rated the methodological quality of the included studies according to criteria based upon Cochrane Collaboration Guidelines (Clarke and Oxman, 2000).

Finally, we constructed tables describing the outcomes for every programme. In order to facilitate a quick and comprehensive overview the results are described in three columns: significant effects, heterogeneous effects, no significant effects. The heterogeneous effects column includes studies that reported effects that: (a) were significant for some measures of the same outcome category but not for other measures; (b) reached statistical significance at some but not at all measurement points in longitudinal studies (except when later measurement points resulted in significant effects, whereas earlier measurements did not. In the latter case a delayed effect may have occurred); (c) report positive effects for some subgroups but not for the total group that was studied.

## RESULTS

Twenty-five reports (relating to 22 programmes) of the 52 studies met the inclusion criteria (Table 1). Some publications described two programmes and some programmes were described in two or more publications. All programmes vary in intensity, duration and the type of client addressed (degree of mental health complaints of person with dementia and carer, severity of dementia).

The quality of the studies according to the Cochrane Collaboration Guidelines ranged from 4 to 9 (Table 1). Eight studies were rated as good quality studies (8 or more). Most studies were not randomised controlled trials and standardised d scores could not be calculated in 12 of the 25 studies, precluding meta-analyses.

Significant effects are defined as significantly stronger ( $p < 0.05$ ) improvement in the programme group than in the control group. For one study this criterion was not applied as a regular control group was not available (Romero and Wenz, 2002).

### *Effects on caregiver by outcome*

The findings on the 25 included studies were classified into three outcome categories with respect to caregivers: mental health (14 studies), burden (13 studies), and competence (7 studies) (Table 2).

Fifteen aspects of *Mental health of the caregiver* were distinguished. Two of the seven studies reporting on depressive symptoms showed significant improvement. Heterogeneous results were described in three

Table 1. Programmes and studies included in the review

Description of programme	Authors of study	Cochrane Quality rating	Measured interval after programme pretest	Group size <sup>1</sup>	Caregiver Measurement instruments	Person with dementia Measurement instruments
1. Weekly groups during 2 years CR <sup>2</sup> : Memory or music group CG: Support group	Berger <i>et al.</i> , 2004	5-6	6, 12, 24 months after start programme	P = 18 C = 18	Mental health: GDS, in course of study replaced by BDI Burden: Zarit Burden Inventory	Cognitive functioning: MMSE GDS and BCRS Physical functioning: NOSGER, Physical Self Maintenance Scale
2. 10 days-training in hospital CR: memory training, reminiscence, activity-group, ROT; CG: psychoeducation, support, skills training, family therapy; Both: recreation and outings	Brodsky and Gresham, 1989	9	3, 6, 12 months	P = 33 C = 32 (waiting list) C = 31 (control)	Mental health: GHQ, Zung	Time to admission: Placement in institution
3. Meeting centres support programme for people with dementia and caregivers; Continuous program. CR: 3 days a week social club CG: informative meetings and support groups; Both: consulting hour, case management and outings	Brodsky <i>et al.</i> , 1997	7	8 years	P = 33 C = 32 (waiting list) C = 31 (control)		Time to admission: Nursing home admission Survival: Time until person's death
	Dröes <i>et al.</i> , 2000	5-6	3, 7 months	P = 33 C = 19		Mental health: Philadelphia Geriatric Centre Morale Scale (PGCMS), Cornell Depression Scale Behavioural problems: Interview for deterioration in daily life in dementia, Assessment Scale Elderly Patients subscales inactivity and aggressive behaviour, Behaviour Observation Scale for Intramural Psychogeriatrics subscale non-social behaviour, Composite measure behaviour problems Time to admission: Institutionalisation/ nursing home admission
	Dröes <i>et al.</i> , 2004b	6	3, 7 months	P = 36 C = 19	Mental health: Carer Strain Questionnaire, PGCMS GHQ Burden: Social support list, Loneliness scale Competence: Jalowiec Coping Scale, Feeling of Competence Scale	
	Dröes <i>et al.</i> , 2004c	6	7 months	P = 89 C = 23		Behavioural problems: Assessment Scale for Elderly Patients and Behaviour Observation Scale for Intramural Psychogeriatrics; subscales non-social behaviour. Composite Measure for behavioural problems Mental health: PGCMS Cornell Scale for Depression in Dementia Dementia Quality of Life

(Continues)

Table 1. (Continued)

Description of programme	Authors of study	Cochrane Quality rating	Measured interval after pretest	Group size <sup>1</sup>	Caregiver Measurement instruments	Person with dementia Measurement instruments
4. Interdisciplinary family group intervention, multi-media training sessions during seven weekly meetings CR: activities and skills training; CG: education, support, skills training	Ostwald <i>et al.</i> , 1999	6	3, 5 months	P = 45–53 C = 30	Mental health: CES-D Burden: Zarit Burden Inventory Competence: Revised Memory and Behavioral Problems Checklist (reaction of caregiver)	Behavioural Problems: RMBPC
5. Multimodal four week treatment programme, four hours a day. CR: memory training, psychotherapy, art therapy, psychomotor therapy; CG: psycho education, psychotherapy, art therapy; Both: therapeutic sessions.	Romero and Wenz, 2002	4	Post	P = 31 <sup>2</sup> No control group, but Alzheimer group and Frontotemporal groups	Mental health: Allgemeine Depressions Skala, Mood part of Mehrdimensionaler Befindlichkeitsfragebogen	Mental health: Cornell Depression Scale Behavioural problems: CERAD behaviour rating scale
6. Casemanagement programme in combination with: CR: treatment by geriatrician (donepezil), CG: psychoeducation, skills training, behaviour management.	Aupperle and Coyne, 2000	6	12 months	P = 27 C = 31	Burden: Zarit Burden Interview	Cognitive functioning: Clinical Dementia Rating Scale Time to admission: time to institutionalisation
7. Case management (social worker), psychiatric consultation, monthly telephone or home visit. In combination with: CR: nursing care, occupational therapy, physiotherapy, social care; CG: home care, respite care. Case management in combination with CR: nursing care, ADL-training, occupational therapy, physiotherapy; CG: home care, respite care Two programmes:	Chu <i>et al.</i> , 2000	6	Every 3–4 months; 3 to 18 months	P = 37 C = 38	Mental health: CES-D Burden: Zarit Burden Interview	Time to admission: Institutionalisation/ long-stay care
8. Extensive case management: caseload 100 client pairs	Miller <i>et al.</i> , 1999	9	Every 6 months to 3 years	P1 (Programme A) 3965  P2 (Programme B) 4130 C = 3,944		Time to admission: Nursing home admission Survival: Time until person's death
9. Intensive case management: case load 30 client pairs	Newcomer <i>et al.</i> , 1999  Yordi <i>et al.</i> , 1997	9  6	Every 6 months to 3 years  Every 6 months to 3 years	P1 (Programme A) and P2 (Programme B) Summed: C = 2,731 C = 2,576 P1 (Programme A) and P2 (Programme B) Summed: 2707 C = 2547	Mental health: Geriatric Depression Scale Burden: Zarit Burden Interview  Burden: Constructed; Number of caring hours, Importance of CG in (i)adl support of person with dementia; Total help from third person in adl tasks, Formal help in adl tasks, Unfulfilled needs in adl tasks	

10. Expanded case management: 2 year support programme Both: nurse management, systematic and comprehensive support, psychoeducation Two home based cognitive training programmes for caregiver (as mediator) and person with dementia 11. Different cognitive domains (12 weeks) 12. Adapted version (8 weeks)	Eloniemi-Sulkava <i>et al.</i> , 2001	9	12, 24 months	P = 53 C = 47	Time to admission: time to institutionalisation to long-term care
	Quayhagen and Quayhagen, 2001	7	Post test	Programme 1: P = 20, Placebo = 19 C = 17 Programme 2: P = 18 C = 12	Cognitive functioning: 25-point logical memory Wechsler: WMS-R DRS WMS-R FAS, 1-min animal category, DRS
Two interventions for caregiver (as mediator) and person with dementia: 13. Behaviour therapy and pleasant events (P1) 14. Behaviour therapy and problem solving (P2)	Teri <i>et al.</i> , 1997	8-9	Post test, 6 months	P1 = 23 P2 = 19 C1 = 10 (typical care) C2 = 20 (waiting list)	Mental health: HDRS, CSDD, BDI Burden: Zarit Burden Interview, Positive aspects of burden
15. Home exercise training programme for person with dementia and caregiver (as mediator) and training of caregiver in behavioural management	Teri <i>et al.</i> , 2003	9	3, 6, 9, 12, 18, 24 months	P = 76 C = 77	Mental health: Cornell depression in dementia scale Physical functioning: SF36, SIP mobility Restricted activity Time to admission: time to institutionalisation due to behavioural problems
16. Environmental Skill Building Programme 5 home contacts, telephone contact by occupational therapist CR: adl-training, adaptation of environment; CG: skills training.	Gitlin <i>et al.</i> , 2001	6-7	Post test	P = 93 C = 78	Behavioural problems: MBPC adapted Physical functioning: Functional Independence Measure
17. Ibidem, but more intensive program.	Gitlin <i>et al.</i> , 2003	8	6 months	P = 89 C = 101	Behavioural problems: RMBPC Physical functioning: Functional Independence Measure
18. Individualized intervention package for behaviour manifestations of dementia; CG: support respite care. Both: home visits by psychiatrist, treatment behaviour problems and depression CR and CG	Hinchliffe <i>et al.</i> , 1995	7	Post test, 16 months	P = 22 C = 18	Behavioural Problems: Present Behavioural Examination Cognitive functioning: Memory Test Time to admission: time to institutionalisation/ permanent residential care

(Continues)

Table 1. (Continued)

Description of programme	Authors of study	Cochrane Quality rating	Measured interval after pretest	Group size <sup>1</sup>	Caregiver Measurement instruments	Person with dementia Measurement instruments
19. Two memory clinic visits CR: full assessment of patient CG: interview and advice Both: family counselling, care plan.	Logiudice <i>et al.</i> , 1999	7	6, 12 months	P = 25 C = 25	Mental health: GHQ, FLP; Alertness behaviour, emotional behav, recreation/pastime, social interaction, sleeprest, total behavioural problems Burden: Zarit Burden Inventory Competence: Dementia Knowledge Test	
20. Home based intervention by memory clinic; CR: memory rehabilitation Both: counselling in early stage of dementia	Moniz-Cook <i>et al.</i> , 1998	8	Post test	P = 15 C = 15	Mental health: BDI and HAD, GHQ, HAD anxiety	Cognitive functioning: Rivermead Behavioural Memory Test Time to admission: time to institutionalisation permanent residential care
21. Domiciliary service: Dementia Support Service (12 months); CR: nursing care, activities, social care CG: respite care Both: practical and emotional support after comprehensive assessment for both.	Riordan and Bennett, 1998	6	6, 12 months (= post test), 18 months	P = 19 C = 19	Mental health: GHQ Burden: Carer Problem Checklist, Machin Strain Scale	Cognitive functioning: MMSE Behavioural Problems: Crichton Royal Behavioural Rating Scale Time to admission: Time to admission to long-stay residential care
22. Psychogeriatric Home care (10 months) CR: nursing care CG: counselling and support groups	Vernooij-Dassen, 1993, Vernooij-Dassen <i>et al.</i> , 1995	8	10 months	P = 58 C = 61	Competence: Feeling of Competence Scale	Time to admission: Time to admission to long-term residential care

<sup>1</sup>P = Programme group; C = control group.

<sup>2</sup>CR = care recipient (person with dementia); CG = caregiver.

Table 2. Effects of combined programmes by outcome category: caregiver mental health, burden and competence (improvement in comparison to control)

Outcome category and outcome measures	Studies reporting significant effects	Studies reporting heterogeneous effects	Studies reporting no significant effects
<i>Caregiver mental health: Depressive symptoms</i>	1. Romero and Wenz, 2002 2. Teri <i>et al.</i> , 1997	1. Ostwald <i>et al.</i> , 1999 ns total sample, trend in depressed subgroup 2. Moniz-Cook <i>et al.</i> , 1998 trend, more depressed at 6 months, less depressed at 18 months 3. Newcomer <i>et al.</i> , 1999 sign but small reduction in three of eight sites, ns over total sample	1. Chu <i>et al.</i> , 2000 2. Berger <i>et al.</i> , 2004 ns, after 24 months trend: P group more depressed
<i>Caregiver mental health: General mental health/psychological and psychosomatic complaints</i>	1. Hincliffe <i>et al.</i> , 1995 2. Moniz-Cook <i>et al.</i> , 1998 trend 3. Brodaty and Gresham, 1989 sign after 12 months, trend at other measurement points		1. Dröes <i>et al.</i> , 2004b
<i>Caregiver mental health: Well-being</i>	1. Gitlin <i>et al.</i> , 2003 trend		
<i>Caregiver mental health: Other aspects of mental health</i>	1. Anxiety (Moniz-Cook <i>et al.</i> , 1998) 2. Psychiatric caseness (Hincliffe <i>et al.</i> , 1995) 3. Perceived change in affect (Gitlin <i>et al.</i> , 2003) 4. Social interaction (after 6 and 12 months, Logiudice <i>et al.</i> , 1999)	1. Alertness Behavior (sign after 6 months, ns after 12 months Logiudice <i>et al.</i> , 1999)	1. Logiudice <i>et al.</i> , 1999 2. Riordan and Bennett, 1998 1. Mood (Romero and Wenz, 2002) 2. Behavior Upset (Gitlin <i>et al.</i> , 2001) 3. Feelings of stress (Dröes <i>et al.</i> , 2004b) 4. Dissatisfaction with life (Dröes <i>et al.</i> , 2004b) 5. Emotional Behavior (Logiudice <i>et al.</i> , 1999) 6. Sleeprest (Logiudice <i>et al.</i> , 1999) 7. Perceived change somatic symptoms (Gitlin <i>et al.</i> , 2003)
<i>Caregiver Burden: Subjective burden</i>	1. Ostwald <i>et al.</i> , 1999	1. Chu <i>et al.</i> , 2000: ns at all points, except after 6 months 2. Newcomer <i>et al.</i> , 1999. Significant in four of eight sites; ns over total sample; significant increase in burden in one site	1. Aupperle and Coyne, 2000 2. Logiudice <i>et al.</i> , 1999 3. Teri <i>et al.</i> , 1997 4. Berger <i>et al.</i> , 2004: trend: after 24 months exp group more burdened
<i>Caregiver Burden: Other aspects</i>	1. Fatigue (Romero <i>et al.</i> , 2002; Alzheimer group) 2. Internal restlessness (Romero <i>et al.</i> , 2002; Alzheimer group) 3. Satisfaction with marital relationship (Quayhagen and Quayhagen, 2001: Intervention 1, 12 weeks) 4. Upset with memory problems of person with dementia (Gitlin <i>et al.</i> , 2003; Yordi <i>et al.</i> , 1997) 5. Number of unfulfilled needs adl tasks (Yordi <i>et al.</i> , 1997) 6. Total days adl help (Gitlin <i>et al.</i> , 2003).	1. Experienced support of Services (Dröes <i>et al.</i> , 2004b: Sign. after 3 months, ns after 7 months) 2. Total help from third person in adl tasks ns. Trend: Better match formal care and (i)adl tasks (Yordi <i>et al.</i> , 1997)	1. Positive Aspects of burden (Teri <i>et al.</i> , 1997) 2. Experienced social support (Dröes <i>et al.</i> , 2004b) 3. Loneliness (Dröes <i>et al.</i> , 2004b) 4. Fatigue (Romero <i>et al.</i> , 2002: frontotemporal group) 5. Internal restlessness (Romero <i>et al.</i> , 2002: frontotemporal group) 6. Satisfaction with marital relationship (Quayhagen and Quayhagen, 2001: Intervention 2: 8 weeks) 7. Upset with disruptive behaviour and (i)adl-problems of person with dementia (Gitlin <i>et al.</i> , 2003) 8. Experienced problems (Riordan and Bennett, 1998) 9. Hours (i)adl help needed (Gitlin <i>et al.</i> , 2003) 10. Primary caregiver tasks: significantly slower in programme groups (Yordi <i>et al.</i> , 1997) 11. Level of secondary caregiver assistance 12. Number of care giving hours (Yordi <i>et al.</i> , 1997)

(Continues)

Table 2. (Continued)

Outcome category and outcome measures	Studies reporting significant effects	Studies reporting heterogeneous effects	Studies reporting no significant effects
<i>Caregiver competence</i> : coping strategies, feelings of competence, mastery, skill enhancement, adl self-efficacy, knowledge on dementia, and response to disruptive behaviour	<ol style="list-style-type: none"> <li>Ostwald <i>et al.</i>, 1999: adequate response to disruptive disorder</li> <li>Dröes <i>et al.</i>, 2004b: feeling of competence after 3 months n.s., after 7 months sign.</li> </ol>	<ol style="list-style-type: none"> <li>Dröes <i>et al.</i>, 2004b: Significant effect on coping subscale avoidance (after 3 months, ns after 7 months. other subscales ns</li> <li>Gitlin <i>et al.</i>, 2001: competence ns, Subgroups: Women enhanced self-efficacy in behaviour management. Spouses less upset behaviour. Women and minorities enhanced self-efficacy in managing functional dependency</li> <li>Gitlin <i>et al.</i>, 2003: competence ns, in women significant and more improvement than in men.</li> <li>Vernooij-Dassen, 1993;</li> <li>Vernooij-Dassen <i>et al.</i>, 1995: competence total group ns; subgroup female housemates significant.</li> </ol>	<ol style="list-style-type: none"> <li>Loguidice <i>et al.</i>, 1999: competence.</li> </ol>

publications. One study showed no significant effects. Finally, one study reported increased depression in the carers participating in a program offering support groups for caregivers and memory/music groups for the persons with dementia.

Of the four studies focusing on General mental health/Psychological and psychosomatic complaints three studies found significant improvement (or a trend) due to the programme studied; one study found no significant effects. Overall well-being was focused on in three studies, one reporting significant effects (trend), the other two not.

Of the remaining twelve outcome variables that were described in single studies four studies reported significant effects. One study reported heterogeneous results, seven reported no significant effects.

Thirteen studies focussed on the impact of the intervention on fifteen aspects of the *burden of the caregiver*.

One of the seven studies reporting on subjective burden showed a positive effect. Heterogeneous results were described in two studies. Three other studies showed no significant effect. In one study subjective burden had increased after 24 months.

The number of studies on the remaining 14 aspects of burden (e.g. upset with memory problems, hours of help needed, unfulfilled needs) was too small to allow for conclusions.

Seven studies provided information on the changes of the programmes on the *competence of the caregiver* (Table 2). One study resulted in positive findings of support programmes on the caregiver's competence to provide an adequate response to disruptive behaviour of the person with dementia. Another study reported a significant positive effect on feeling of competence after seven months. Five studies reported heterogeneous results of the four programmes studied: One study reported a significant effect on the coping subscale avoidance after three months, but no effect after seven months. Two studies showed significant improvement in subgroups (women, spouses, minorities) rather than in the total group. Another two studies reported only significant improvement in the subgroup of female household members. Finally, one study reported no significant effect on the competence of the caregiver.

We conclude that clear positive effects of combined programmes on the mental health, burden and competence of the caregiver are difficult to establish. Only a few outcome measures were reported on by an adequate number of studies: caregiver mental health (depressive symptoms, general mental health and well-being) and caregiver burden (subjective burden). General mental health appears to be the most



promising target for combined programmes. The effects of the programmes on other aspects of caregiver mental health, burden and competence are less conclusive.

#### *Effects on people with dementia by outcome*

Studies focused on the mental health, cognitive functioning, behavioural problems, physical functioning, delayed admission to long-stay care and mortality of the person with dementia (Table 3).

Three of the five studies focussing on various aspects of *mental health of the person with dementia* resulted in significant improvements in depression scores in the programme versus a control group. One study showed improvement for some aspects of mental health, but not for others. Another study did not show any improvement in those elderly included in the programme group.

Two of the five studies addressing *cognitive functioning*, reported significantly less cognitive decline in the programme group than in the control group, one study described heterogeneous results, and in two studies no (significant) difference was established.

One of the nine studies focussing on *behavioural problems* described positive effects on all behavioural problems measured. Three studies found heterogeneous results and five found no significant effects.

One of the four studies on the *physical functioning* of the person with dementia resulted in positive findings. One study described heterogeneous results. Two studies showed no significant results.

Eight of the 12 studies reporting on *admission into a long-stay facility* (usually a nursing home) described positive findings, indicating a longer time period until admission in the programme groups than in the control groups. Three studies reported heterogeneous results. One study found no significant delay of admission.

One study reported a significantly longer *survival* in the support group than in the control group. Another study did not find a significant effect on mortality.

Combined programmes appear to be effective on the mental health (depressive symptoms) of persons with dementia. The programmes also delay the admission of the person with dementia to long-stay care. The effects on cognitive and physical functioning, behavioural problems and survival of the person with dementia vary.

#### *Combined effects of programmes*

Although all 22 programmes aimed to affect both caregiver and the person afflicted with dementia, for

only 18 programmes data for the effects on both caregiver and the person with dementia were available.

Four of the 22 programmes resulted in consistent positive results for both caregiver and patient (Teri *et al.*, 1997; Brodaty and Gresham, 1989; Brodaty *et al.*, 1997; Moniz-Cook *et al.*, 1998; Romero and Wenz, 2002). Another six studies reported partly positive results for both caregiver and patient (Vernooij-Dassen, 1993; Vernooij-Dassen *et al.*, 1995; Hinchliffe *et al.*, 1995; Chu *et al.*, 2000; Gitlin *et al.*, 2001; Dröes *et al.*, 2000, 2004b, 2004c). Five studies reported positive results only for the caregiver and seven had only positive results for the person with dementia. One programme had no positive effects at all.

## CONCLUSION

We studied the research literature on combined programmes for the effects on the care receiver and the caregiver. 25 of the evaluated 52 studies (22 programmes) were analysed in detail.

Caregiver general mental health is positively affected by combined programmes. The findings for other mental health outcomes, such as depressive symptoms, well-being and for burden are not conclusive. Competence has been addressed in more recent years than aspects of mental health and burden. The combined programmes may be promising for the competence of some subgroups, in particular women and minority caregivers.

For the persons with dementia mental health is often improved and admission to long-stay care is delayed by the programmes.

For 18 of the programmes data are available for both caregiver and person with dementia. Four of the combined programmes resulted in consistent positive results for both caregiver and patient. Another six showed some positive effects for both groups. The remaining studies describe positive results for either group. We conclude that almost half of the combined programmes benefit both caregiver and person with dementia.

## DISCUSSION

Our results are hampered by the limited number and varying quality of the available studies. The number of studies using identical instruments and follow-up measurement points in similar target groups is limited. The aims of an intervention, and subsequently the primary outcome measures of its effect studies are often not clearly stated. The use of multiple measurement instruments for the same or similar outcomes increases the risk of chance capitalization

Table 3. Effects of combined programmes on persons with dementia by outcome category (improvement in comparison to control)

Outcome category and outcome measures	Studies reporting significant effects	Studies reporting heterogeneous effects	Studies reporting no significant effects
<i>Person with dementia: mental health:</i> depression and dissatisfaction, depressive behaviour, positive affect, negative affect, self-esteem, feeling of belonging	1. Romero and Wenz, 2002 2. Teni <i>et al.</i> , 1997 3. Teni <i>et al.</i> , 2003	1. Dröes <i>et al.</i> , 2004c: Significant effect on some scales (depressive behaviour, self-esteem), ns for other measures	1. Dröes <i>et al.</i> , 2000
<i>Person with dementia: cognitive functioning:</i> various cognitive functions	1. Aupperle and Coyne, 2000 2. Moniz-Cook <i>et al.</i> , 1998	1. Quayhagen <i>et al.</i> , 2001: Programme 1: Improvement in all cognitive functions; decline in all functions in placebo and control group. Significant in some functions, not all. Programme 2: Improvement in all cognitive functions in experimental group; decline in control group. Significant in some functions 1. Dröes <i>et al.</i> , 2000: Significant effect problem behaviour, inactivity (3 and 7 months) and non-social behaviour (7 months) and total score behavioural problems (7 months). Otherwise ns. 2. Hinchliffe <i>et al.</i> , 1995: Significant difference after phase 1 (15/20 vs 2/13) and improvement remains; no improvement for waiting list condition after intervention 3. Dröes <i>et al.</i> , 2004c: Significant effect Inactivity, Non-social behaviour and Behavioural Problems total; ns for Aggressive behaviour.	1. Berger <i>et al.</i> , 2004 2. Riordan and Bennett, 1998
<i>Person with dementia: behavioural problems:</i> in general, memory related problems and disruption related problems, behavioural disorder	1. Romero and Wenz, 2002	1. Gitlin <i>et al.</i> , 2001 2. Gitlin <i>et al.</i> , 2003 3. Ostwald <i>et al.</i> , 1999 4. Riordan and Bennett, 1998 5. Berger <i>et al.</i> , 2004	
<i>Person with dementia: physical functioning:</i> adl, iadl, mobility, restricted activity	1. Teni <i>et al.</i> , 2003	1. Gitlin <i>et al.</i> , 2001: Significant less iadl decline, adl decline ns 1. Aupperle and Coyne, 2000: Significant, but no care admission 2. Chu <i>et al.</i> , 2000: ns, in subgroup of mild-moderate cognitive disorder: significant delay (52.5 days) 3. Eloniemi <i>et al.</i> , 2001: During first months significantly less admissions, effect disappeared during 2 years. More effect in patients in more advanced stage of dementia	1. Berger <i>et al.</i> , 2004 2. Gitlin <i>et al.</i> , 2003 1. Miller <i>et al.</i> , 1999 ns, In one of 8 experimental sites more admissions
<i>Person with dementia: long stay admission</i>	1. Brodaty and Gresham, 1989 2. Brodaty <i>et al.</i> , 1997 3. Dröes <i>et al.</i> , 2004b 4. Teni <i>et al.</i> , 2003 (trend) 5. Moniz-Cook <i>et al.</i> , 1998 6. Riordan and Bennett, 1998 7. Vemooij-Dassen, 1993 8. Vemooij-Dassen <i>et al.</i> , 1995		
<i>Person with dementia: survival</i>	1. Brodaty <i>et al.</i> , 1997		1. Miller <i>et al.</i> , 1999

and complicates interpretation of the results. Many studies lack sufficient power. Regrettably, the included reports did not allow for a meta-analysis.

The modest effects on caregivers' burden and depression of interventions aimed at caregivers of persons with dementia have been noted before and must be seen in the context of a progressive degenerative condition (Cooke *et al.*, 2001; Zarit and Leitsch, 2001; Schulz *et al.*, 2002; Brodaty *et al.*, 2003; Dröes *et al.*, 2004a). Thus, the delay of admission to long-stay care is a major success of combined programmes.

It has been argued that many programmes do not show optimal effects because of their low intensity or dosage (Adkins, 1999; Zarit and Leitsch, 2001). Although some studies show more effects after a long period of support (e.g. Moniz-Cook *et al.*, 1998; Quayhagen and Quayhagen, 2001; Dröes *et al.*, 2004c), others find no or modest differences between programmes that vary in intensity or duration (Yordi *et al.*, 1997; Moniz-Cook *et al.*, 1998; Logiudice *et al.*, 1999; Gitlin *et al.*, 2001, 2003). Thus, our results do not suggest that intensive and long programmes are more effective than brief programmes.

In order to explain the relationship between intervention dosage and outcome more information on the effects of different programme components or programme types is needed (Bourgeois and Schulz, 1996; Brodaty *et al.*, 2003; Meiland *et al.*, submitted).

The results suggest that attention needs to be paid to the different needs of subgroups. Gitlin *et al.* (2001, 2003) described relatively better outcomes in female caregivers, in minority caregivers and spouse caregivers. One study showed a greater improvement in mental health in caregivers and persons with dementia with depressive symptoms than in those without these symptoms (Ostwald *et al.*, 1999). Hinchliffe *et al.* (1995) showed significant improvement in the mental health of depressed caregivers. Recently, lonely caregivers were seen to benefit from the support programme that was included in the present review (Dröes *et al.*, 2006). A programme targeting depressed persons with dementia improved their mental health (Teri *et al.*, 1997). Gitlin *et al.* (2001, 2003) and Chu *et al.* (2000) showed that it may be worthwhile to target a sample with mild dementia.

Just as combined programmes may improve by addressing specific subgroups, a focus on specific rather than a multitude of needs, may be productive, as Teri *et al.* show (1997, 2003).

The large number of inconclusive effects precludes recommendations of immediate large scale implementation of evidence based combined programmes.

#### KEY POINTS

- Combined intervention programmes are often effective in delaying admittance to long stay care and to a lesser extent in improving the general mental health of the caregiver and mental health of the person with dementia. Effects on other mental health aspects, burden and competence of the caregiver, and on survival, physical health, cognitive functioning and behavioural problems of the person with dementia are less conclusive.
- Research and practice should focus on the diversity of needs of different target groups for whom programmes may be most effective.
- Care professionals must define their programme goals and target groups well.

In the area of clinical decision making the results regarding institutionalization, caregiver general mental health and the mental health of people with dementia are promising. The meaning of various other outcomes such as caregiver depression, burden and competence is still debatable. Care professionals and policy makers may address those for whom positive effects may be expected, such as female and minority caregivers and depressed persons with dementia.

#### ACKNOWLEDGEMENTS

This study was supported by a grant from the Netherlands Organisation for Health Research and Development (number 13600006). We thank Leonie de Goei and Myriam Heijnders for their support in the collection of study reports and their critical comments and Steve Zarit for his suggestions concerning the discussion of the results.

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