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Review

A systematic review of staff training interventions to reduce the behavioural and psychological symptoms of dementia

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ABSTRACT

Behavioural and psychological symptoms of dementia (BPSD) are highly prevalent and problematic in care settings. Given the limited effectiveness of medical treatments, training care staff to understand and manage these symptoms is essential for the safety and quality of life of people with dementia. This review evaluated the effectiveness of staff training interventions for reducing BPSD. A systematic literature search identified 273 studies. Twenty studies, published between 1998 and 2010, were found to meet the inclusion criteria. Overall, there was some evidence that staff training interventions can impact on BPSD: twelve studies resulted in significant symptom reductions, four studies found positive trends and four studies found no impact on symptoms. No links were found between the theoretical orientation of training programmes and their effectiveness. Training was also found to impact on the way staff behaved towards residents. A quality screening, using pre-specified criteria, revealed numerous methodological weaknesses and many studies did not adhere to the recommended guidelines for the conduct of cluster randomised controlled trials. There is an urgent need for more high quality research and evidence-based practice in BPSD.

1. Introduction

1.1. Behavioural and psychological symptoms in dementia

There were estimated to be 35.6 million people with dementia worldwide in 2010, with the figure expected to reach 65.7 million by 2030 (World Alzheimer's Report, 2010) In time, the loss of functional ability associated with dementia makes independent living very difficult, resulting in many people being admitted to care homes. The term 'Behavioural and Psychological Symptoms of Dementia' (BPSD) is used to describe the non-cognitive effects of dementia, mainly behavioural problems, depression and anxiety (Finkel et al., 1996). It is estimated that 80% of people with dementia living in residential care homes have BPSD (Margallo-Lana et al., 2001; Zuidema et al., 2007). Although in the past BPSD has frequently been treated with anti-psychotic medication, this approach carries significant risks (e.g. by increasing the risk of cerebrovascular events) and it is not clinically effective (Banerjee, 2009; Ihl et al., 2011). Additionally, two randomised controlled trials have demonstrated the lack of effectiveness of anti-depressants for people with dementia (Banerjee et al., 2011; Lyketsos et al., 2003).

1.2. Staff training research

Many care home residents with BPSD have complex needs which are difficult to manage, yet staff often lack basic training in dementia care (Ballard et al., 2001). Training interventions, which provide staff with strategies for managing BPSD, offer a proactive and potentially cost effective strategy (Lawlor, 2002). In the UK, the National Dementia Strategy (Department of Health, 2009) and the National Institute for Clinical Excellence (2007) urge that all care staff should receive access to specialist dementia training, yet there are no guidelines suggesting which training programmes may be the most effective. Past reviews on staff training have had variable findings. For example, Kuske et al. (2007) found that many studies had positive effects on either staff or resident outcomes and Aylward et al. (2003) found evidence for the short term effectiveness of staff training. However, half the studies reviewed by McCabe et al. (2007) did not significantly impact on the behaviour of residents, even when levels of staff knowledge and behaviour management skills improved.

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There has been no review to date which has specifically investigated the effectiveness of training programmes for reducing BPSD. This review addresses the following research questions: (1) Are staff training programmes effective for reducing BPSD in people with dementia living in care homes? (2) Does the effectiveness of training programmes vary according to the theoretical model or the intensity of the training programme? (3) Do staff training programmes have secondary benefits on staff behaviour, attitudes and psychological well-being?

2. Method

2.1. Literature search

A systematic literature search was conducted using PsychInfo, PubMed, EMBASE, Medline and CINALH. Keywords were entered to fulfil the following criteria: (1) staff training interventions ('staff training'; 'staff education'); (2) involving care staff ('nursing staff'; 'nursing'; 'care'; 'caregivers'; 'staff'; 'care assistants'; 'carers'); (3) within a care home setting ('nursing home'; 'care home'; 'assisted living residence'; 'residential care institution'; 'long-term care'); (4) with people diagnosed with dementia ('dementia'; 'Alzheimer's disease'); (5) evaluating the impact on BPSD ('behavioural problems'; 'psychological symptoms'; 'psychiatric symptoms'; 'agitation'; 'aggression'; 'depression'; 'anxiety'; 'challenging behaviour'). Titles; abstracts and excerpts were reviewed according to the inclusion and exclusion criteria. Reference lists were also reviewed to identify additional publications.

2.2. Inclusion criteria

- Randomised controlled trials (RCTs), quasi-experimental designs and patient as own comparison designs. Non-randomised designs, rated as adequate or above using the York Centre for Systematic Reviews quality criteria (University of York, 2009), were included due to the limited number of randomised studies.
- Training interventions designed to help paid care staff manage BPSD in residents living in nursing or residential care homes.
- Studies published in English, in peer-reviewed journals, between 1998 and 2011.
- Resident mood and behaviour evaluated as a primary outcome measure.

2.3. Quality rating

The quality of RCTs was rated using Jadad et al.'s (1996) criteria, which provides a rating from 0 to 5. This is based on the quality of randomising procedures, use of blinding and the description of withdrawals and drop-outs The maximum score (5) requires double blinding, yet only single blinding is possible in psychological research. Therefore studies in this review were able to achieve a maximum score of 4. The CONSORT guidelines (Campbell et al., 2004) were consulted to provide guidance on factors specific to the conduct of Cluster Randomised Trials (CRCTs), such as the determination of sample size and the method of statistical analysis. The quality of non-randomised designs were rated using the York Centre for Systematic Reviews criteria (University of York, 2009). This assessed (i) how adequately participants and the intervention were described, (ii) validity, reliability and appropriateness of measures, (iii) drop-out rate and associated bias, (iv) adequacy of follow up, (v) matching of groups and use of control groups, and (vi) blindness of outcome assessments. The study was rated as good if it met all criteria, adequate if it met more than half, and poor if it met less than half.

3. Results and discussion

3.1. Included studies

In total, 237 citations were initially identified but 217 were excluded as they failed to meet the inclusion criteria (Fig. 1). Twenty studies were included in the review comprising 13 RCTs and seven non-randomised studies. Table 1 illustrates the design, setting, description if intervention, total numbers, outcomes measures, assessment points, results and quality ratings. Results are presented according to the three research questions.

3.2. Are staff training programmes effective for reducing BPSD in people with dementia living in care homes?

Staff training is a potentially valuable method of reducing BPSD in residents with dementia living in care homes. Of the 13 RCTS, only two achieved Jadad scores of 4 and two achieved scores of 3. Out of the seven other studies, only one was rated as 'good' on the York criteria. This highlights the poor quality of the available evidence and inconsistency of the findings in this review (Table 1), making it difficult to draw firm conclusions in agreement with previous reviews (McCabe et al., 2007; Kuske et al., 2007). Seven RCTs found that training interventions were effective for reducing BPSD (Deudon et al., 2009; Teri et al., 2005; Chenoweth et al., 2009; Finnema et al., 2001; McCallion et al., 1999; Proctor et al., 1999; Testad et al., 2010a,b) whilst three RCTs found positive trends despite a lack of significant findings (Davison et al., 2007; Magai et al., 2002; Testad et al., 2005). Three RCTs found no evidence for the benefits of staff training interventions on BPSD (Fossey et al., 2006; Schrijnemaekers et al., 2002; Visser et al., 2008). Five non randomised designs (Landreville et al., 2005; Wells et al., 2000; Burgio et al., 2002; DeYoung et al., 2002; Lyne et al., 2006) obtained positive findings, one found a positive trend which failed to reach significance (Oh et al., 2005) and one no impact of staff training on BPSD (Moniz-Cook et al., 1998). Sixteen studies included a follow-up assessment and most found that the positive effects of the training intervention were maintained at follow-up. This indicates that once changes to care practices are made, the positive effects can usually be maintained over time.

Most studies assessed the impact of staff training on behaviour problems in dementia. Five studies (Finnema et al., 2005; Lyne et al., 2006; McCallion et al., 1999; Proctor et al., 1999; Teri et al., 2005) looked at the impact on depression, and only one measured the impact on anxiety in dementia (Teri et al., 2005). Four studies achieved a reduction in depression, indicating that depression may be amenable to change through staff training. Beneficial interventions may include the use of care planning (Proctor et al., 1999; Lyne et al., 2006), enhancing communication (McCallion et al., 1999) and introducing pleasant events (Teri et al., 2005).

3.3. Does the effectiveness of training programmes vary according to the theoretical model orientation utilised or the intensity of the training programme?

3.3.1. Theoretical model

This review divided the 20 included studies into five categories:

Behavioural-oriented approach with person-environment fit incorporates ideas from both social learning theory (Bandura, 1978), which states that behaviours are maintained through reinforcement, and 'person-environment fit' (Lawton, 1975), which considers how the demands of the environment must be adapted to suit each individual. These programmes help staff understand and modify the sequence of events which lead to behavioural problems, by identifying activators, behaviours and consequences (ABC's).

Table 1
Description of studies reviewed.

Authors	Design, setting and description of intervention	*N*	Outcome measures and assessment points	Results	Quality rating and comments
Behavioural oriented approach with person-environment fit					
Teri et al. (2005)	CRCT	*Residents*	*Residents*	*Residents*	*Jadad* = 2/4
	Intervention vs. control group	31	GDS, CAS, RMBPC	Sig reduction in behaviour problems (RMBPC, NPI, ABID), depression (GDS) &anxiety (CAS) for intervention group	*Pos*: Analysis adjusted for clustering effects, blind assessors
	Single blind	*Staff*	ABID, NPI	*Staff*	*Neg*: No power analysis to estimate sample size
	4 Assisted Living Residences, US	25	*Staff*	No sig increase in sense of competency (SSCQ) or job satisfaction. Staff reaction to behaviour improved (RMBPC & NPI)	Method of randomisation not described
	Duration: 8 weeks *Total hours*: 10 Medium intensity *Supervision*: 2 h		SSQC Job satisfaction *Baseline & 8 week follow up*		
Davison et al. (2007)	CRCT	*Residents*	*Residents*	*Residents*	*Jadad* = 1/4
	Training + peer support vs. training only vs. control group	113	CMAI	Non sig reduction in agitation (CMAI), with a positive trend, for training group in between baseline & 8 week follow-up	*Pos*: 6 month follow-up, residents were assessed by two staff raters
	Non blind	*Staff*	*Staff*	*Staff*	*Neg*: Randomisation method unclear, no power analysis, no blinding of assessors, no adjustment for clustering effects, no description of drop-outs, no intention to treat analysis
	6 Residential Care Homes, Australia.	90	MBI, SEDC, SNPA	No effect on burnout (MBI), sig improvement in self efficacy (SEDC) for training group. Sig improved ratings by nursing staff for training + peer support group at follow up	
	Duration: 8 weeks *Total hours*: 10 Low intensity *Supervision*: None		*Baseline, 8 week & 6 month follow up*		
Visser et al. (2008)	CRCT	*Residents*	*Residents*	*Residents*	*Jadad* = 1/4
	Training + peer support vs. training only vs. control group	76	CMAI, ADRQL, restraint	No sig. reduction in aggression (CMAI) or sig. increase in quality of life scores (ADRQL) across time or group.	*Pos*: 6 month follow up
	Non-blind	*Staff*	*Staff*	*Staff*	*Neg*: Method of randomisation not described, no power analysis, staff group sizes small, high attrition rate, no description of drop-outs, no intention to treat analysis or adjustment for clustering effects
	3 Residential Care Homes, Australia.	52	SAQ, MBI	Training + peer support group sig improved on skills & knowledge subscale of the SAQ at 8 week & 3 month follow-up, no effect on burnout (MBI) across time or group	
	Duration: 8 weeks *Total hours*: 10 Medium intensity *Supervision*: None		*Baseline, 8 weeks, 3 &6 month follow-up*		
Burgio et al. (2002)	Quasi-experimental	*Residents*	*Residents*	*Residents*	York = Adequate
	Training with motivational system (FSM) vs. conventional management (CSM)	88	CMAI	Sig. decrease in agitation (CMAI) at 4 week follow up, maintained at 3 & 6 month follow-up	*Pos*: Included observational measures, 6 month follow-up period
	Non-blind	*Staff*	*Residents & Staff*	*Staff*	*Neg*: No control group. No blinding of assessors

Table 1 (*Continued*)

Authors	Design, setting and description of intervention	*N*	Outcome measures and assessment points	Results	Quality rating and comments
	2 Nursing Homes, US	106	BMSC, CABOS	Sig. reduction in use of ineffective communication strategies (BMSC & CADOS). No sig. increase in use of behaviour management strategies. No sig. difference between FSM and CSM groups at 4 week follow-up, but the FSM system was sig more effective for maintaining skills at 6 month follow-up	
	Duration: 4 weeks *Total hours*: 12.5 Medium intensity *Supervision*: 15 care interactions observed		*Baseline, 4 weeks, 3 & 6 months follow-up*		
Oh et al. (2005)	Quasi-experimental One group time series design	*Residents* 32	*Residents* RASI, RASII, ABMS translated into Korean	*Residents* Non-sig. reduction in aggression scores (RAS1 &RASII) between baseline, 12 week & 16 week follow up with a positive trend	York = Adequate *Pos*: 16 week follow-up, use of observational measure (RASII)
	1 Nursing Home, South Korea	*Staff*	*Baseline, 12 & 16 weeks follow-up*	*Staff*	*Neg*: One group design lacked internal validity, translated outcome measures, no power analysis, inter-rater reliability not calculated
	Duration: 12 weeks *Total hours*: 9 Low intensity *Supervision*: Approx 5 h per trainee	36		Significant increase in staff abilities to manage behaviour (ABMS)	
DeYoung et al. (2002)	Quasi-experimental pilot study One group time series design	*Residents* 32	*Residents* NHBPS	*Residents* Sig decrease in problem behaviours(NHBPS) between baseline & 6 month follow-up, non-sig. decrease between baseline & 3 month follow-up. Seven behaviours sig. reduced at 6 month follow-up	York = Adequate *Pos*: 6 month follow-up period, use of observational measures
	1 Long-term care unit, US		*Staff*	*Staff*	*Neg*: One group design lacked internal validity, inter rater reliability not calculated
	Duration: 6 mths		Interviews on problem management	Sig increase in the use of behaviour management strategies at follow-up	
	Total hours: 28 High Intensity *Supervision*: None		*Baseline, 3 & 6 months follow-up*		
Landreville et al. (2005)	Quasi-experimental One group time series design	*Residents* 21	*Residents* CMAI	*Residents* Sig. decrease in agitated behaviour (CMAI) at 2 month follow-up	York = Adequate *Pos*: Validity demonstrated for newly designed measures. Included detailed data on behaviour change in 2 residents
	1 Long-term care unit, Canada	*Staff*	*Staff*	*Staff*	*Neg*: One group design lacks internal validity, follow-up would have strengthened the study
	Duration: 2 months	26	Self efficacy& satisfaction measure	Sig. increase in the use of behaviour management techniques, sig. increase in self efficacy, high satisfaction with training	
	Total hours: 15.5 Medium intensity *Supervision*: 8 h		*Baseline & 2 month follow-up*		

Table 1 (*Continued*)

Authors	Design, setting and description of intervention	*N*	Outcome measures and assessment points	Results	Quality rating and comments
Communication approaches					
McCallion et al. (1999)	CRCT NASCP training vs. wait list control	*Residents* 105	*Residents* Cornell, CMAI, MOSES, medication, restraint	*Residents* Sig. reduction in depression (Cornell) & agitated behaviour (CMAI) for training group at 3 and 6 months. No consistent impact on irritability, withdrawal and disorientation (MOSES)	*Jadad* = 1/4 *Pos*: 6 month follow-up, blind assessor
	Single blind	*Staff*	*Staff*	*Staff*	*Neg*: Did not account for clustering in design or analysis, no power analysis. Method of randomisation not described, no description of withdrawals or drop-outs, no intention to treat analysis
	2 Nursing Homes, US	88	KAT, MHQ	No change in KAT scores. Sig improvements in staff ability to manage problems at 3 months, not maintained at 6 months	
	Duration: 3 months *Total hours*: 7.8 Low intensity *Supervision*: 4 h		*Baseline, 3 & 6 months*		
Magai et al. (2002)	CRCT Training group vs. placebo training group vs. wait list control	*Residents* 91	*Residents* BEHAVE-AD, CMAI, Cornell, MAX	*Residents* Non-sig. reduction in behaviour problems (BEHAVE-AD,CMAI) and depression (Cornell) between baseline and follow-up	*Jadad* = 2/4 *Pos*: Three group design, four follow-up points, assessors and trainer was all blind to hypotheses of study, inter-rater reliability measured on the staff rating scales
	Single blind	*Staff*	*Staff*	Residents in training group showed sig more positive affect. Effect not maintained at follow-up	*Neg*: Did not account for clustering in design or analysis, staff sample was small, randomisation method not described, inadequate handling of attrition
	3 Nursing Homes, US *Duration*: 2 weeks	20	BSI *Baseline, 3, 6, 9, 12 weeks*	*Staff* Depression, anxiety and somatic symptoms (BSI) decreased sig. over time in both training groups in comparison to the non-training group	
	Total hours: 10 Medium intensity *Supervision*: None				
Person-centred approaches					
Chenoweth et al. (2009)	CRCT Person-centred care training vs. dementia care mapping vs. usual care	*Residents* 289	*Residents* CMAI, NPI, QUALID, QUIS, TESS-NH, incidents of problem behaviour, hospital admissions	*Residents* Sig. decrease in problem behaviours (CMAI) at PCC and DCM sites at 4 & 8 month follow-up. Psychiatric symptoms (NPI) did not improve sig. in PCC group. No improvement in quality of life (QOLID) for PCC or DCM group	*Jadad* = 4/4 *Pos*:
	Single blind	*Staff*	*Baseline, 4 months & 8 months follow-up*		Allocation method appropriate, adjustment for clustering effects, good handling of attrition, 8 month follow-up
	15 Care Homes, Australia *Duration*: 4 months	30			*Neg*: Experimental and control groups were not matched at baseline, although this was accounted for in the analysis
	Total hours: 18 Medium intensity *Supervision*: None				
Lyne et al. (2006)	Quasi-experimental non equivalent group design (natural control group)	*Residents*	*Residents*	*Residents*:	York = Adequate

Table 1 (*Continued*)

Authors	Design, setting and description of intervention	*N*	Outcome measures and assessment points	Results	Quality rating and comments
	14 Residential Care Homes, UK	256	GMS-DS	Sig. reduction in depression (GMS-DS) between baseline &10 week follow-up for those who received the intervention. No change for residents who did not receive intervention. Effectiveness of the intervention reduced for those with more severe dementia	*Pos*: Assessors blind to hypotheses, 33 week follow-up
	Duration: 120 weeks	*Staff*	*Baseline, 10, 21 & 33 week follow-up*		*Neg*: No planned control group, self report measure may not have been valid for residents with moderate dementia
	Total hours: 12 Medium intensity *Supervision*: None	166			
Moniz-Cook et al. (1998)	Quasi-Experimental	*Residents*	*Residents*	*Residents*: No change in the frequency of behavioural problems (PBI) at 4 month follow-up, but problems were rated as less severe	York = Adequate
	Non-equivalent group design	84	PBI	*Staff*	*Pos*: 13 month follow-up, inter rater reliability calculated on PBI
	Training Group vs. control group	*Staff*	*Staff*	*Staff* rated their ability to manage problems as sig improved, although the effect was not maintained at 13 month follow-up	*Neg*: Assessors non blind, no discussion of validity of PBI, small sample size, no discussion of power analysis
	3 Care Homes, UK *Duration*: 5 weeks *Total hours*: 15 Medium intensity *Supervision*: None	83	PBI *Baseline, 4 &13 months follow-up*		
Emotion-oriented approaches					
Schrijnemaekers et al. (2002)	CRCT Emotion oriented care vs. control group	*Residents* 151	*Residents* DBRSP, GRGS, CMAI, ADL	*Residents* No reduction in problem behaviours (DBRSP and GRGS) or agitation (CMAI)	*Jadad* = 2/4 *Pos*: 12 month follow-up, attrition adequately handled, analysis adjusted for clustering, intention to treat analysis used
	Non-blind	*Staff*	*Baseline, 3, 6 & 12 month follow-up*		*Neg*: Assessors not blind, no description of method of randomisation
	16 Homes for Aged, Netherlands *Duration*: 3 months *Total hours*: 52.5 High intensity *Supervision*: 10.5 h	128			
Finnema et al. (2005)	CRCT Emotion oriented care vs. usual care	*Residents* 146	*Residents* ASEP, Cornell, CMAI	*Residents* Emotion oriented care sig. improved emotional adaption (aggregate score from CSDD, BIP & CMAI) & maintenance of a positive self image(aggregate score from PGCMS &BIP) for residents with mild – moderate dementia, not found in residents with moderate to severe dementia	*Jadad* = 2/4 *Pos*: 7 month follow-up, inter rater reliability assessed on observational measures, adjusted for clustering in analysis, adequate handling of attrition
	Non-blind	*Staff*	GRGS, PGCMS	*Staff*: Sig. reduced stress symptoms (GHQ) for sub-group of staff who applied more emotion focused strategies. No changes for experience of stress (OSS) or job satisfaction (DWSS)	*Neg*: Method of randomisation not described, no blinding of assessors, no adjustment for clustering effects in sample size calculation
	14 Nursing Homes, Netherlands *Duration*: 7 months *Total hours*: 16 Medium intensity	99	*Baseline, 7 months* *Staff* OSS, GHQ, DWSS		

Table 1 (*Continued*)

Authors	Design, setting and description of intervention	*N*	Outcome measures and assessment points	Results	Quality rating and comments
	Supervision: None				
Other approaches					
Fossey et al. (2006)	CRCT	*Residents*	*Residents*	*Residents*: No sig. reduction in agitated behaviour (CMAI) between intervention and control homes. Sig. reduction in proportion of residents taking neuroleptics in the intervention group. No sig. difference in well-being according to DCM	*Jadad* = 4/4
	Training intervention vs. control group	306	CMAI, prescription of neuroleptics		*Pos*: Assessors blind, methods of blinding & randomisation methods described, power analysis & data analysis adjusted to account for clustering effects
	Single blind	*Staff*	DCM		*Neg*: No follow-up period post intervention
	12 Nursing Homes, UK *Duration*: 10 months *Total hours*: approx 25 for each staff trainee High intensity *Supervision*: None	Not stated			
Proctor et al. (1999)	CRCT	*Residents*	*Residents*	*Residents*	*Jadad* = 3/4
	Intervention group vs. control group	120	AGECAT depression, Crichton Scale, Barthel Index	Sig. decrease in depression symptoms (AGECAT) for the intervention group at follow-up. No sig. decrease in behaviour (Crichton) or activities of daily living (Barthel). Sig fewer visits by GPs to intervention homes	*Pos*: Method of randomisation described, analysis adjusted for clustering effects, attrition handled appropriately
	Non-blind		Visits by health professionals		*Neg*: Sample size calculation did not adjust for clustering effects, assessors non blind, longer term follow-up required
	12 Residential Care Homes, UK *Duration*: 6 months *Total hours*: 19 High intensity *Supervision*: 24 visits				
Testad et al. (2005)	CRCT	*Residents*	*Residents*	*Residents*	*Jadad* = 3/4
	Intervention vs. control group	151	BARS	Non-sig. decrease in agitation at follow-up for the intervention group but a positive trend. Restraint declined by 54% in the treatment group and increased by 18% in the control group	*Pos*: Blind assessors, description of drop-outs
	Single blind	*Staff*	Use of restraint		*Neg*: Method of randomisation not described, no adjustment for clustering effects, no intention to treat analysis, follow-up required
	4 Nursing Homes, Norway *Duration*: 7 months *Total hours* = 13 Medium intensity *Supervision*: None	36			
Deudon et al. (2009)	CRCT	*Residents*	*Residents*	*Residents*: Sig. decrease in agitation symptoms (CMAI) at post intervention and at follow-up. Sig reduction in hyperactivity on NPI for intervention group. Sig reduction in observed agitation in residents (OS)	*Jadad* = 2/4

Table 1 (*Continued*)

Authors	Design, setting and description of intervention	*N*	Outcome measures and assessment points	Results	Quality rating and comments
	Intervention group vs. control group	306	CMAI, NPI, OS		*Pos*: 12 week follow-up, blind assessor, observational measure included
	Single blind	*Staff*	*Baseline, 8 & 12 week follow-up*		*Neg*: Method of randomisation not described, no adjustment for clustering effects in sample size calculation or analysis, no inter rater reliability on observational measure, no intention to treat analysis
	16 Nursing Homes, France *Duration*: 18 weeks *Total hours*: 25.5 High intensity *Supervision*: 24 h	Not stated			
Testad et al. (2010a,b)	CRCT	*Residents*	CMAI (Norwegian version), proportion of residents given restraint	*Residents*: Sig reduction in aggression (CMAI) for intervention group at 6 & 12 month follow-up. Sig reduction in proportion of residents restrained at 6 months, although reduction not maintained at 12 month follow-up	*Jadad* = 1/4
	Single blind	145	*Baseline, 6 & 12 month follow-up*		*Pos*: 12 month follow-up, good description of drop-outs, blind assessors
	Intervention vs. control group	*Staff*			*Neg*: No adjustments for clustering effects, groups not equivalent at baseline, no intention to treat analysis
	4 Nursing Homes, Norway *Duration*: 6 month *Total hours*: 20 Medium intensity *Supervision*: None	197			
Wells et al. (2000)	Quasi-experimental design	*Residents*	*Residents*	*Residents*:	York = Good
	1 training unit (randomly selected) vs. 3 control units	40	MIBM, PAS, LPRS	Sig increased interactions & calmer behaviour (MIBM), sig reduced aggression (PAS) & sig improved functional abilities (LPRS) for residents in training group	*Pos*:
	4 units in a Geriatric Care Centre, Canada	*Staff*	*Staff*	*Staff*:	Researcher blind to group allocation, inter-rater reliability demonstrated for observational measures, staff rated for use of new skills
	Duration: 6 months	44	IBM, NHUS	Caregivers interacted with residents in a sig more person-centred and flexible way (IBM). No change in staff rating on ease of caregiving or stress levels	*Neg*:
	Total hours: 5.8 Low intensity		ease of caregiving. *Baseline, 3 &6 month follow up*		Groups not allocated at random
	Supervision: None				

Pos, positive points; Neg, negative points; Sig = Statistically significant; ABID, Agitated Behaviours in Dementia; ABMS, Aggressive Behaviour Management Scale; ADL, Activities of Daily Living; ADRQL, Alzheimer Disease Related Quality of Life; AGECAT, Automatic Geriatric Examination for Computer Assisted Taxonomy; ASEP, Assessment Scale for Elderly Patients; AT, Knowledge of Alzheimer's Test; BARS, Brief Agitation Rating Scale; Barthel, Barthel Activity of Daily Living Index; BEHAVE-AD, Behavioural Pathology in Alzheimer's Disease Rating Scale; BMSC, Behaviour Management Skills Checklist; BSI, Brief Symptom Inventory; CABOS, Computer-Assisted Behavioural Observation System; CAS, Clinical Anxiety Scale; Crichton, Crichton Royal Behavioural Rating Scale; CMAI, Cohen Mansfield Agitation Inventory; Cornell, Cornell Scale for Depression in Dementia; DBRSP, Dutch Behaviour Rating Scale for Psycho-geriatric inpatients; DCM, Dementia Care Mapping; DWSS, Dutch Work Satisfaction Scale; GDS, Geriatric Depression Scale; GHQ, General Health Questionnaire; GMS-DS, Geriatric Mental State Schedule; GRGS, Geriatric Resident Goal Scale; IBM, Interactional Behaviour Measure; LPRS, London Psychogeriatric Rating Scale; MAX, Maximally Discriminative Facial Movement Coding System; MBI, Maslach Burnout Inventory; MHQ, Mental Health Questionnaire; MIBM, Modified Interaction Behaviour Measure; MOSES, Multidimensional Observation Scale for Elderly Subjects; NHBPS, Nursing Home Behaviour Problem Scale; NHUS, Nurses Hassles and Uplift Scale; NPI, Neuropsychiatric Inventory; OS, Observation Scale; OSS, Organisation and Stress Scale; PAS, Pittsburgh Agitation Scale; PBI, Problem Behaviour Index; PCC, Person centred care; RASI, Ryden Aggression Scale 1; PGCMS, Philadelphia Geriatric Centre Moral Scale; QUALID, Quality of Life in Late Stage Dementia; QUIS, Quality Interactions Schedule; RASII, Ryden Aggression Scale 2; RMBPC, Revised Memory and Behaviour Problem Checklist; SAQ, Staff Attitude Questionnaire; SEDC, Self Efficacy of Dementia Care; SNPA, Scale of Nursing Performance Adapted; SSCQ, Short Sense of Competency Questionnaire; TESS-NH, Therapeutic Environment Screening Survey for Nursing Homes.

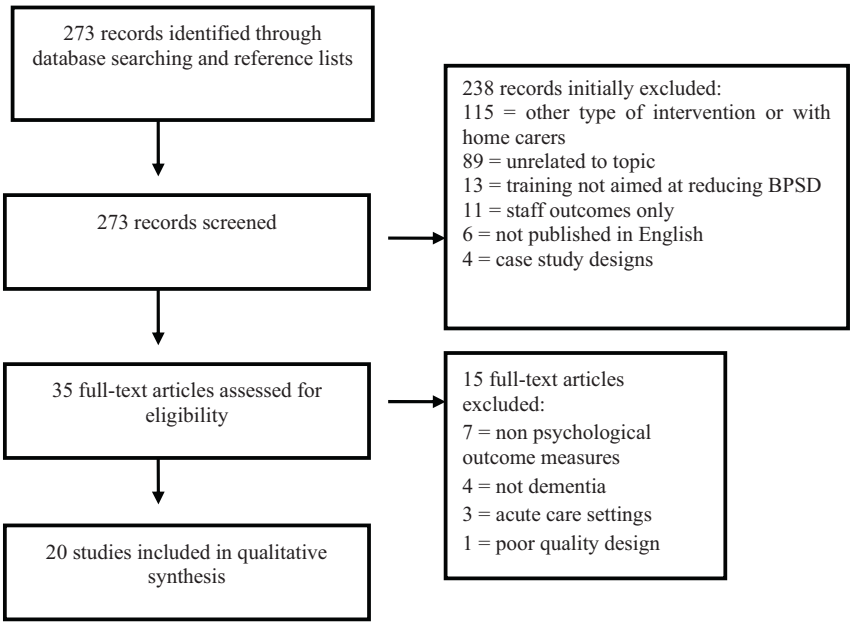

Fig. 1. Flow chart showing numbers of studies identified, included and excluded.

Communication approaches teach staff practical communication strategies, enabling them to understand how their communication can trigger behaviour and encourage conversations.

Person-centred approaches draw on Kitwood's work (1997), which involves understanding each person as an individual and focusing on their own needs and abilities. They can also involve 'life history' work for residents.

Emotion-oriented approaches draw from the Validation Therapy model (Feil, 1992), whereby staff are trained to validate and respect the feelings of people with dementia. These trainings may also incorporate other techniques, such as reminiscence therapy, using multi-sensory tools and developing care plans.

Other approaches include the studies which did not fit into any of these categories. These were (i) a skills based approach designed to reduce the need for restraint (Testad et al., 2005, 2010a,b); (ii) a practice based approach (Deudon et al., 2009), which involved giving staff instruction cards with advice about how to manage everyday care tasks, (iii) a goal planning intervention (Proctor et al., 1999), (iv) a systemic consultation approach which included behaviour management techniques, positive care planning, communication skills and reminiscence (Fossey et al., 2006) and (v) a unique enablement approach, in which staff were taught to use an abilities focused morning care routine with residents (Wells et al., 2000).

There was no consistent link between the theoretical approach and the effectiveness of the intervention. This mirrors the finding from other psychological interventions in which many theoretical approaches can be equally beneficial, often described as the 'dodo bird effect' (Luborsky et al., 2006). The current evidence base indicates the 'behavioural-oriented approach with person-environment fit' may be the most promising model, although there is less evidence to show the maintenance of these improvements over time. There is also evidence for 'person-centred approaches' to reduce BPSD and these benefits may be maintained over time. However, this approach may be particularly vulnerable to organisational problems because it requires systemic changes to be implemented. The evidence from studies drawing on other approaches is also promising, with good evidence from studies which have evolved directly from clinical practice (Deudon et al., 2009; Testad et al., 2010a,b). There is also reasonable evidence for one programme which has integrated a range of theoretical approaches for treating depression (Proctor et al., 1999) and from one study which has used a unique enablement approach (Wells et al., 2000). Meanwhile there is a less evidence in favour of the systemic consultation approach for reducing agitation, even though it has been found to be helpful for changing prescribing practices (Fossey et al., 2006). There is weaker and more inconsistent evidence for 'emotion-oriented' and 'communication approaches'.

3.3.2. Intensity of the training programme

A list of the total training hours received by each staff participant in each programme was compiled. Three categories of training intensity were defined (see Table 1), based on the median duration of all the included studies. 10 h or less was categorised as low intensity (4 studies), 11–18 h as medium intensity (11 studies) and more than 19 h as high intensity (5 studies). There did not appear to be a link between the intensity of training programmes and their effectiveness for reducing BPSD, which indicates that low or medium intensity programmes may be more cost effective than higher intensity programmes. However, training programmes which are too brief, such as the programme delivered by Magai et al. (2002) may not provide a sufficient dose of training to change care practice. Unfortunately none of the studies reviewed have included a measure of effect size or numbers needed to treat, which would have allowed better comparisons of the effectiveness of studies.

As an adjunct to the workshop training sessions, ten programmes also provided individual supervision sessions to help staff incorporate strategies into their everyday practice. Results suggested that implementing additional supervision sessions may improve the overall effectiveness of training programmes. If programmes are only run over a relatively short period of time, these additional supervision sessions may maximise the transfer of learning (Ford and Weissbein, 2008). Attendance at training programmes is often very poor and care homes can find it difficult to release a large proportion of staff to attend training. Yet if only a proportion of staff attend training programmes, the effect of the training may become diluted (Davison et al., 2007). Burgio et al. (2002) also demonstrated that a specialised supervision system, incorporating observations, feedback and incentives for staff was more effective for maintaining skills over time in comparison to a

conventional supervision model. This finding indicates that even a relatively subtle change in staff behaviour can significantly impact on residents' symptoms, but that staff will often revert back to previous styles of working without an ongoing supervision system.

3.4. Can staff training programmes have secondary benefits on staff behaviour, attitudes and psychological well-being?

Twelve studies looked at the impact of training interventions on staff factors, with the majority of studies having at least one positive finding. Five studies showed staff reporting an improved ability to manage behavioural problems (DeYoung et al., 2002; Landreville et al., 2005; Moniz-Cook et al., 1998; Oh et al., 2005; Teri et al., 2005) and three studies found that observers rated the performance of staff more highly following their attendance at training programmes (Burgio et al., 2002; Wells et al., 2000; Davison et al., 2007). Two studies found that staff training increased staff self-efficacy (Davison et al., 2007; Landreville et al., 2005), two studies obtained a reduction in staff stress symptoms (Magai et al., 2002; Finnema et al., 2005) and one study (Visser et al., 2008) found a positive effect on staff attitudes. However, Wells et al. (2000) found no impact on staff stress and Teri et al. (2005) found no improvement in job satisfaction or staff sense of competence. McCallion et al. (1999) found that staff demonstrated an increased knowledge about the management of mental health problems, although this effect was not maintained at follow-up and dementia knowledge did not improve. In summary, there is some evidence to suggest that self efficacy and stress symptoms can be reduced by training interventions, although factors such as burnout and job satisfaction seem to be less amenable to change.

3.5. Limitations

Because observations between individuals are often correlated in cluster designs, the standard error is reduced and there is an increased risk of a Type 1 error (Bland, 2004). These designs require a higher sample size to be adequately powered and the analysis needs to adjust for clustering effects. Only three studies adjusted for these effects in their sample size calculation (Chenoweth et al., 2009; Fossey et al., 2006; Proctor et al., 1999) or their analysis (Chenoweth et al., 2009; Fossey et al., 2006; Teri et al., 2005). Meanwhile, some of the staff measures may not have been sensitive enough to detect change, or the nature of the change may have been somewhat abstract or difficult to assess with the available quantitative measures.

3.6. Implications for clinical practice

Although some training programmes state that a manual is available, few were published or easily accessible. Authors will need to make manuals more accessible and wider utilisation will generate more practice-based evidence.

Staff training programmes are very dependent on organisational factors, such as management style, care culture and rifts between staff groups. Several authors were concerned that organisational factors may have limited the implementation of programmes (Finnema et al., 2005) or prevented staff from applying ideas from training consistently in practice (Moniz-Cook et al., 1998; Visser et al., 2008). The model used by Chenoweth et al. (2009) was successfully implemented, with only a small number of staff being required to attend the training. This showed that changes in care practice can occur on an organisational level, although staff need to be in a position to implement change and require appropriate support and supervision.

3.7. Future research

Future research designs will need to be multicentre, adequately powered, adhere to recommended guidelines, and be conducted across languages and cultures (Campbell et al., 2004). In addition, interventions should be better defined so they can be manualised, amenable to replication, and of modest cost. Studies will need to prepare to deal with the many logistical barriers including high staff turnover, reduced staff to resident ratios and inflexible institutional policies (Murfield et al., 2011), as well as generalizability across languages and cultures. Characteristics of individual trainees should be considered, as these may contribute to the transferability of learning (Blume et al., 2009). Finally, qualitative work could aid understanding of the experience of participants and mechanisms of change.

3.8. Conclusions

There is evidence that staff training programmes can reduce BPSD in people with dementia living in care homes. Training programmes which have a strong theoretical base, are of sufficient intensity and are supplemented by additional supervision and good management support may be the most beneficial. There is a need for more evidence-based practice in BPSD and the development of high quality research, as prioritised by the UK Ministerial Advisory Group on Dementia Research (2011). It is becoming increasingly clear that providing care home staff with skills to work with BPSD, without resorting to the use of antipsychotic medication, is essential for the safety and quality of life of people with dementia (Banerjee, 2009).

References

Aylward, S., Stolee, P., Keat, N., Johncox, V., 2003. Effectiveness of continuing education in long-term care: a literature review. The Gerontologist 43 (2), 259–271.

Ballard, C., Fossey, J., Chithramohan, R., Howard, R., Burns, A., Thompson, P., Tadros, G., Fairbairn, A., 2001. Quality of care in private sector and NHS facilities for people with dementia: cross sectional survey. British Medical Journal 323 (7310), 426–427.

Bandura, A., 1978. Social learning theory of aggression. Journal of Communication 28 (3), 12–29.

Banerjee, S., 2009. The Use of Antipsychotics in People With Dementia: Time for Action. A Report for the Minister of State for Care Services. Department of Health.

Banerjee, S., Hellier, J., Dewey, M., Romeo, R., Ballard, C., Baldwin, R., Bentham, P., 2011. Sertraline or mirtazapine for depression in dementia: a randomised, multicentre, double-blind, placebo-controlled trial. The Lancet 378, 403–411.

Bland, J.M., 2004. Cluster randomised trials in the medical literature: two bibliometric surveys. BMC Medical Research Methodology 4 (1), 21.

Blume, B.D., Ford, J.K., Baldwin, T.T., Huang, J.L., 2009. Transfer of training: a meta-analytic review. Journal of Management 36 (4), 1065–1105.

Burgio, L.D., Stevens, A., Burgio, K., Roth, D.L., Paul, P., Gerstle, J., 2002. Teaching and maintaining behavior management skills in the nursing home. The Gerontologist 42 (4), 487–496.

Campbell, M.K., Elbourne, D.R., Altman, D.G., 2004. CONSORT statement: extension to cluster randomised trials. British Medical Journal 328 (7441), 702–708.

Chenoweth, L., King, M.T., Jeon, Y., Brodaty, H., Stein-Parbury, J., Norman, R., Haas, M., Luscombe, G., 2009. Caring for aged dementia care resident study (CADRES) of person-centred care, dementia-care mapping, and usual care in dementia: a cluster-randomised trial. The Lancet Neurology 8 (4), 317–325.

Davison, T.E., McCabe, M.P., Visser, S., Hudgson, C., Buchanan, G., Kuruvilla, G., 2007. Controlled trial of dementia training with a peer support group for aged care staff. International Journal of Geriatric Psychiatry 22 (9), 868–873.

Department of Health (DOH), 2009. Living Well With Dementia: A National Dementia Strategy.

Deudon, A., Maubourguet, N., Gervais, X., Leone, E., Brocker, P., Carcaillon, L., Riff, S., Lavallart, B., Robert, P.H., 2009. Non-pharmacological management of behavioural symptoms in nursing homes. International Journal of Geriatric Psychiatry 24 (12), 1386–1395.

DeYoung, S., Just, G., Harrison, R., 2002. Decreasing aggressive, agitated, or disruptive behavior: participation in a behavior management unit. Journal of Gerontological Nursing 28 (6), 22–31.

Feil, N., 1992. Validation therapy. Geriatric Nursing 13 (3), 129–133.

Finkel, S.I., Costa e Silva, J., Cohen, G., Miller, S., Sartorius, N., 1996. Behavioral and psychological signs and symptoms of dementia: a consensus statement on current knowledge and implications for research and treatment. International Psychogeriatrics 8 (3), 497–500.

Finnema, E., de Lange, J., Dröes, R.M., Ribbe, M., van Tilburg, W., 2001. The quality of nursing home care: do the opinions of family members change after implementation of emotion-oriented care? Journal of Advanced Nursing 35 (5), 728–740.
Finnema, E., Dröes, R.M., Ettema, T., Ooms, M., Adèr, H., Ribbe, M., van Tilburg, W., 2005. The effect of integrated emotion-oriented care versus usual care on elderly persons with dementia in the nursing home and on nursing assistants: a randomized clinical trial. International Journal of Geriatric Psychiatry 20 (4), 330–343.
Ford, J.K., Weissbein, D.A., 2008. Transfer of training: an updated review and analysis. Performance Improvement Quarterly 10 (2), 22–41.
Fossey, J., Ballard, C., Juszczak, E., James, I., Alder, N., Jacoby, R., Howard, R., 2006. Effect of enhanced psychosocial care on antipsychotic use in nursing home residents with severe dementia: cluster randomised trial. British Medical Journal 332 (7544), 756–761.
Ihl, R., Frölich, L., Winblad, B., Schneider, L., Burns, A., Möller, H.J., 2011. World Federation of Societies of Biological Psychiatry (WFSBP) guidelines for the biological treatment of Alzheimer's disease and other dementias. World Journal of Biological Psychiatry 12, 2–32.
Jadad, A.R., Moore, R.A., Carroll, D., Jenkinson, C., Reynolds, D.J., Gavaghan, D.J., McQuay, H.J., 1996. Assessing the quality of reports of randomized clinical trials: is blinding necessary? Controlled Clinical Trials 17 (1), 1–12.
Kitwood, T., 1997. Dementia Reconsidered, first ed. Open University.
Kuske, B., Hanns, S., Luck, T., Angermeyer, M.C., Behrens, J., Riedel-Heller, S., 2007. Nursing home staff training in dementia care: a systematic review of evaluated programs. International Psychogeriatrics 19 (5), 818–841.
Landreville, P., Dicaire, L., Verreault, R., Lévesque, L., 2005. A training program for managing agitation of residents in long-term care facilities: description and preliminary findings. Journal of Gerontological Nursing 31 (3), 55–56.
Lawlor, B., 2002. Managing behavioural and psychological symptoms in dementia. British Journal of Psychiatry 181, 463–465.
Lawton, M.P., 1975. Competence, environmental press and the adaptation of older people. In: Windley, P.G., Byerts, T.O, Ernst, F.G. (Eds.), Theory Development in Environment and Aging. Gerontological Society, Washington, DC.
Luborsky, L., Rosenthal, R., Diguer, L., Andrusyna, T.P., Berman, J.S., Levitt, J.T., Seligman, D.A., Krause, E.D., 2006. The dodo bird verdict is alive and well-mostly. Clinical Psychology: Science and Practice 9 (1), 2–12.
Lyketsos, C.G., DelCampo, L., Steinberg, M., Miles, Q., Steele, C.D., Munro, C., Baker, A.S., et al., 2003. Treating depression in Alzheimer disease: efficacy and safety of sertraline therapy, and the benefits of depression reduction: the DIADS. Archives of General Psychiatry 60 (7), 737–746.
Lyne, K.J., Moxon, S., Sinclair, I., Young, P., Kirk, C., Ellison, S., 2006. Analysis of a care planning intervention for reducing depression in older people in residential care. Aging & Mental Health 10 (4), 394–403.
Magai, C., Cohen, C.I., Gomberg, D., 2002. Impact of training dementia caregivers in sensitivity to nonverbal emotion signals. International Psychogeriatrics 14 (1), 25–38.
Margallo-Lana, M.A., Swann, J., O'Brien, A., Fairbairn, K., Reichelt, D., Potkins, P., Mynt Ballard, C., 2001. Prevalence and pharmacological management of behavioural and psychological symptoms amongst dementia sufferers living in care environments. International Journal of Geriatric Psychiatry 16 (1), 39–44.
McCabe, M.P., Davison, T.E., George, K., 2007. Effectiveness of staff training programs for behavioral problems among older people with dementia. Aging & Mental Health 11 (5), 505–519.
McCallion, P.R., Toseland, W., Lacey, D., Banks, S., 1999. Educating nursing assistants to communicate more effectively with nursing home residents with dementia. The Gerontologist 39 (5), 546–558.
Ministerial Advisory Group on Dementia Research, 2011. Final Report From the MAGDR Subgroup 1 on Priority Topics in Dementia Research. Medical Research Council.
Moniz-Cook, E., Agar, S., Silver, M., Woods, R., Wang, M., Elston, C., Win, T., 1998. Can staff training reduce behavioural problems in residential care for the elderly mentally ill? International Journal of Geriatric Psychiatry 13 (3), 149–158.
Murfield, J., Cooke, M., Moyle, W., Shum, D., Harrison, S., 2011. Conducting randomized controlled trials with older people with dementia in long-term care: challenges and lessons learnt. International Journal of Nursing Practice 17 (1), 52–59.
NICE-SCIE, 2007. Dementia The NICE-SCIE Guideline on Supporting People With Dementia and Their Carers in Health and Social Care. British Psychological Society.
Oh, H., Myung, H.H., Eom, M., 2005. Development and analysis of the effects of caregiver training program on aggressive behavior in elders with cognitive impairment. Taehan Kanho Hakhoe Chi 35 (4), 745–753.
Proctor, R.A., Burns, A., Powell, H.S., Tarrier, N., Faragher, B., Richardson, G., Davies, L., South, B., 1999. Behavioural management in nursing and residential homes: a randomised controlled trial. The Lancet 354, 26–29.
Schrijnemaekers, V., van Rossum, E., Candel, M., Frederiks, C., Derix, M., Sielhorst, H., van den Brandt, P., 2002. Effects of emotion-oriented care on elderly people with cognitive impairment and behavioral problems. International Journal of Geriatric Psychiatry 17, 926–937.
Teri, L., Huda, P., Gibbons, L., Young, H., van Leynseele, J., 2005. STAR: a dementia-specific training program for staff in assisted living residences. The Gerontologist 45, 686–693.
Testad, I., Aasland, A.M., Aarsland, D., 2005. The effect of staff training on the use of restraint in dementia: a single-blind randomised controlled trial. International Journal of Geriatric Psychiatry 20, 587–590.
Testad, I., Mikkelsen, A., Ballard, C., Aarsland, D., 2010a. Health and well-being in care staff and their relations to organizational and psychosocial factors, care staff and resident factors in nursing homes. International Journal of Geriatric Psychiatry 25, 789–797.
Testad, I., Ballard, C., Brønnick, K., Aarsland, D., 2010b. The effect of staff training on agitation and use of restraint in nursing home residents with dementia: a single-blind, randomized controlled trial. The Journal of Clinical Psychiatry 71, 80–86.
University of York, 2009. Systematic reviews: CRD's guidance for undertaking reviews in health care. York: Centre for Reviews and Dissemination University of York.
Visser, S.M., McCabe, M.P., Hudgson, C., Buchanan, G., Davison, T.E., George, K., 2008. Managing behavioural symptoms of dementia: effectiveness of staff education and peer support. Aging & Mental Health 12, 47–55.
Wells, D.L., Dawson, P., Sidani, S., Craig, D., Pringle, D., 2000. Effects of an abilities-focused program of morning care on residents who have dementia and on caregivers. Journal of the American Geriatrics Society 48 (4), 442–449.
Zuidema, S., Koopmans, R., Verhey, F., 2007. Prevalence and predictors of neuropsychiatric symptoms in cognitively impaired nursing home patients. Journal of Geriatric Psychiatry and Neurology 20, 41–49.