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**Psychosocial interventions for people with dementia: An overview and commentary on recent developments**

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Psychosocial interventions for people with dementia: An overview and commentary on recent developments

Olazarán and colleagues (2010) concluded that non-pharmacological multi-component interventions have positive effects on cognitive functioning, activities of daily living, behaviour and mood of people with dementia. Our aim here is to provide an up-to-date overview of research into psychosocial interventions and their impact on psychosocial outcomes. We focused on randomised controlled trials, controlled studies and reviews published between October 2008 and August 2015, since Olazarán et al.'s review. The search of PsychInfo, Medline and the Cochrane database of systematic reviews yielded 61 relevant articles, organised into four themes echoing key phases of the care pathway: Living at home with dementia (5 reviews, 8 studies), carer interventions (3 reviews, 4 studies), interventions in residential care (16 reviews, 12 studies), and end-of-life care (3 reviews, 2 studies), along with an additional group spanning community and institutional settings (6 reviews, 2 studies). Community findings suggested that appointment of dementia specialists and attention to case management can produce positive outcomes; physical therapies, cognitive training and modified cognitive behaviour therapy also had a range of benefits. There was more limited evidence of positive benefits for people with dementia through interventions with family carers. Thirty-two articles focused on the management of 'behavioural symptoms' through a range of interventions all of which had some evidence of benefit. Also a range of multi-component and specific interventions had benefits for cognitive, emotional and behavioural well-being of people with dementia in residential settings, as well as for quality of life. Overall, interventions tended to be short-term with impact only measured in the short-term. We recommend further research on interventions to promote living well in the community post-diagnosis and to address end-of-life care. Development of psychosocial interventions

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would benefit from moving beyond the focus on control of behaviours to focus on wider aspects of life for people with dementia.

**Keywords:** Alzheimer's disease; Non-pharmacological; Psycho-social; RCTs; Review

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## **The continuing need for research on psychosocial interventions**

Most people who receive a diagnosis of dementia live with the condition for three to seven years post-diagnosis (Todd *et al.*, 2012). Over this time, they and their relatives have to adapt to its increasing impact on cognitive capacities, as well as its secondary effects on everyday tasks, self-care, relationships and sense of self. This is especially challenging since adaptation takes place against a backdrop of continuing erosion of the same cognitive resources that enable coping. Those affected often receive poor services, which contributes to poor quality of life. In the face of this, continuing research into care and support interventions that have the potential to enhance quality of life and quality of care remains an important focus. This is illustrated by the priority setting exercise conducted by the UK Alzheimer's Society with the James Lind Alliance (Alzheimer's Society, 2013). This consultation with people with dementia, their relatives, care and research organisations resulted in the generation of ten research priorities notable for their focus on care as opposed to underlying biomedical mechanisms. Addressing such priorities, researchers with an applied psychosocial focus draw on both theoretical understanding and basic research to develop interventions, with the aim of enhancing functioning and wellbeing. In this article, we aim to give an overview of the current state of research in this field.

Psychosocial interventions harness the leeway that exists to promote wellbeing, in the absence of a cure. They contribute to enabling people with dementia to live well now. Much of the variability between individuals in their response to dementia can be explained by the interaction between cognitive impairment and a range of psychological and social factors; including the influences of a person's character, lifestyle and habits, their response to stress, their ways of coping and their ability to regulate their emotions; as well as the resources available to a person through significant others, as embodied in relationships and social networks, and the capacity of significant others to provide sensitive support and care. This

breadth of view underpins the widely accepted bio-psycho-social model of dementia, also known as the enriched model or person-centred approach (Kitwood & Bredin, 1992), and informs the development of psychosocial interventions.

### ***Recent overviews of psychosocial research***

In their review of non-pharmacological therapies for dementia, Olazarán, Reisberg, Clare *et al.*, (2010), reviewed 179 randomised controlled trials (RCTs) published up until September 2008. Olazarán *et al.* grouped the studies according to the target of the intervention (person with dementia, caregiver, ‘other’) and, within these groups, categorised them according to the type of intervention (18, 5 and 3 types respectively in each group). They concluded that there was consistent high-quality evidence from multiple RCTs that multi-component interventions for caregivers delayed moves of those with dementia to institutional care. They also found that there was consistent evidence from at least two lower-quality RCTs that: multi-component interventions for those with dementia have positive effects on cognitive functioning, activities of daily living, behaviour and mood; multi-component interventions for those with dementia *and* caregivers have benefits for quality of life; cognitive training and cognitive stimulation enhance cognitive functioning; and training of professional caregivers enhances behaviour and reduces use of restraints.

The increasing volume of research in this field has also led to ‘overviews of reviews’, evaluating evidence for approaches that might be used by informal carers (Hulme *et al.*, 2010), interventions used in long-term care (Vernooij-Dassen *et al.*, 2010) and interventions to address psychiatric symptoms and challenging behaviour (Dickson *et al.*, 2012). These three overviews of Cochrane reviews as well as those published in peer-reviewed journals, have considerable overlap in the reviews they consider, though Dickson *et al.* (2012) include six reviews that are not covered elsewhere. Hulme *et al.* (2010) and Vernooij-Dassen *et al.*

(2010) cover the period up to 2009 (though the latter also included one additional review from 2010) and summarise 33 and 27 reviews respectively. Dickson et al. (2012) consider 30 reviews published up until March 2011.

All three overviews found that there was evidence that physical activity for people living with dementia has benefits not only in reducing ‘behavioural problems’ in residential care, but also possibly more broadly, improving fitness, function and mood. Two of the three concluded that there is evidence for effectiveness of music (Hulme *et al.*, 2010; Dickson *et al.*, 2012), hand massage or gentle touch (Hulme *et al.*, 2010; Dickson *et al.*, 2012) and behavioural management approaches (Vernooij-Dassen *et al.*, 2010; Dickson *et al.*, 2012) in reducing behavioural issues, and possibly depression, with most of the evidence being derived from studies in residential care settings. In addition, Vernooij-Dassen *et al.* (2010) concluded that there is evidence for the effectiveness of cognitive stimulation, while Dickson *et al.* (2012) concluded there is evidence for the likely effectiveness of staff and caregiver training and support and multi-sensory stimulation, and also that validation therapy was *not* likely to be effective. All three concluded that there was a lack of evidence for a wide range of other potentially beneficial approaches.

## ***Aims***

In light of the continuing rapid development of psychosocial interventions, in this article we aim to provide an up-to-date snapshot of the current state of the field by focusing on pertinent reports of high quality research, and reviews, which have been published since Olazarán *et al.*'s (2010) comprehensive overview of RCTs, and which were not covered by any of the three overviews of reviews (Hulme *et al.* 2010; Vernooijh-Dassen *et al.*, 2010; Dickson *et al.*, 2012). This is not a systematic and exhaustive review but a ‘helicopter view’

that aims to give a high level coherent narrative of current trends, gaps and issues in this broad and disparate field.

## **Method**

Our approach was akin to that used for a scoping review with our purpose being similar to the first of four options put forward by Arksey and O'Malley (2005): "to examine the extent, range and nature of research activity; this type of rapid review [ . . . ] is a useful way of mapping fields of study where it is difficult to visualize the range of material that might be available." (p. 21). Armstrong et al. (2011) state that a scoping review is used to identify parameters and gaps in a body of literature; inclusion and exclusion criteria may be developed *post hoc*; quality is not an initial priority; the review may or may not involve data extraction; and the synthesis is typically more qualitative than quantitative.

### ***Inclusion criteria***

In order to focus only on papers with a certain degree of methodological rigour, we aimed to include recent peer-reviewed RCTs, controlled studies, and reviews of psychosocial interventions published between October 2008 and August 2015, addressing care and support needs of people with dementia. Our principle interest was in interventions delivered through psychological and social means, although physical activity and environmental interventions were included if they considered impact on psychosocial outcomes. Only studies which considered psychosocial outcomes (cognitive functioning, emotional well-being, behaviour, level of functioning in everyday activities, quality of life) were included, with these outcomes for people with dementia being the same as those employed by Olazarán *et al.* (2010) for their review. Basic research into psychosocial constructs, such as people's sense of self, awareness or ways of coping was excluded; as were reports of interventions directed primarily at carer well-being rather than that of people with dementia. We excluded opinion

pieces, intervention protocols, and quantitative studies that were uncontrolled or which had poor statistical power due to small sample size. Reviews were excluded if they had been included in any of the three overviews of psychosocial interventions that were introduced above.

### ***Search strategy***

To locate the studies, we undertook searches using the PsychInfo and Medline databases, as well as the Cochrane database of systematic reviews, searching for peer-reviewed articles published between October 2008 and end August 2015, with the start date being designed to follow on from the review by Olazarán *et al.* (2010). Groups of keywords were those connected with dementia, and those connected with psychosocial interventions, which were then used in combination. This search yielded 171 articles of which 64 met our criteria, 39 systematic reviews and 25 reports of original research. Three reviews (Forbes *et al.*, 2008; O'Connor *et al.*, 2009; Vasse *et al.*, 2010) had been included in the overviews of reviews by Vernooij-Dassen *et al.* (2010) or Dickson *et al.* (2012) and so were excluded.

### ***Data extraction***

We extracted and tabulated information from each paper concerning its aims, design/method, outcome variables and findings. For empirical studies, information on design included the number of participants, or where cluster randomised the number of units (e.g. care homes). For reviews, information on design included the number of studies included and whether these were RCTs or more inclusive.

### ***Synthesis of findings***

The papers were divided into four groups according to the stage of living with dementia. It was felt that organising the findings along the care pathway in this way would be

pragmatically useful to service providers. The first group concerns interventions which were for people with dementia (sometimes along with a significant other, or delivered via community or primary care staff) and aimed at helping people to live well at home in the community following diagnosis. The second group includes studies of interventions, which aimed to impact on the life of the person with dementia but which were carried out through a close caring relative or friend. The third group is of studies in care home settings and the final group is of studies specifically about interventions at end-of-life. A number of papers included mixed samples of people living at home and in care, in which place of care was not considered in analysis. These were included in a separate section of the review. The number of papers in each group is shown in table 1.

TABLE 1 ABOUT HERE

## **Findings**

### ***Interventions for people with dementia living in the community***

We located eight RCTs and five systematic reviews published since Olazarán *et al.*'s (2010) review and specific to providing direct interventions to support people with dementia to live at home (see table 2).

TABLE 2 ABOUT HERE

None concerned the diagnostic process itself, though one review and one RCT focused upon primary care aspects of service provision, showing contrasting results. Meeuwssen, Melis, van Der Aa *et al.* (2012) failed to show a difference between the quality of outcomes achieved by primary care services as opposed to specialist memory clinics from the carers' perspective, whilst the review (Perry, Droskovic, Lucassen, *et al.*, 2011) concluded that primary-care based services only impacted on the quality of dementia care and quality of

life when there were specially appointed dementia care managers in the primary care setting as well as training for primary care staff (Vickrey, Mittman, Connor *et al.*, 2006). There was little evidence of change in attitude or impact on the detection of dementia resulting from training of primary care staff per se, even though their knowledge improved (Perry *et al.*, 2011).

Three further papers (one review and two RCT) focused on broad approaches to post-diagnostic care, finding evidence that case management/care co-ordination had a range of benefits for people with dementia (Low, 2011), as did the appointment of dedicated dementia staff, along with staff training, in extra care housing (Brooker, Argyle, Scally, & Clancy, 2011), and home-based care coordination improved quality of life and reduced time to transfer into care settings (Samus *et al.* 2014). The review found that consumer-directed care increased satisfaction and use of community services but not outcomes; and that integrating care across health and social boundaries did not lead to explicit benefits (Low, 2011). These findings add to evidence that the appointment of dementia specialists and attention to case management in the community (not just the provision of training or the integration of services) can produce positive outcomes.

The other papers in this group looked at the impact of more specific approaches (physical therapy, psychological therapy, cognitively-focused therapies, social group interventions, dyadic interventions and dyadic reminiscence). Four out of 13 papers in a review of diverse physical therapies (Potter, Ellard, Rees, & Thorogood, 2011) assessed the impact on psychological factors, finding a degree of evidence for benefit. Farina *et al.*'s (2014) review of six RCTs also found a positive impact of exercise on cognitive functioning. The papers on cognitively focused interventions (Kurz, 2011; 2012) confirmed that those with mild to moderate dementia can learn or relearn but this does not generalise to everyday activity if cognitive training is not tailored to meaningful goals. Van't Leven *et al.* (2013)

found that studies only found significant benefit when a specific aspect of functioning was focused upon, and Regan's (2013) review of 15 studies found that modified cognitive behavioural therapy had some efficacy in improving mood. Finally an RCT of couple reminiscence (Woods, Aguirre, Spector & Orrell, 2012) failed to show benefit for those with dementia or their carers, though it was suggested from a compliance analysis that there were benefits for people with dementia alongside raised anxiety for carers.

### ***Mixed community and care sample studies***

Eight papers were identified concerning samples spanning those living at home and those living in care (table 3).

#### TABLE 3 ABOUT HERE

Four of these reviewed current evidence across very diverse sets of studies, due to the lack of a body of focused research into the areas in question, which were: Interventions to enhance sense of self or identity (Caddell & Clare, 2011); non-pharmacological interventions to enhance quality of life (Cooper, Mukadam, Katona *et al.*, 2012); the impact of physical activity on ADL performance (Blankevoort, van Heuvelen, Boersma *et al.*, 2010), cognitive focused interventions (Carrion *et al.*, 2015) and occupational therapy (OT; Kim, 2012). The conclusions drawn are inevitably tenuous but all these areas are promising enough to warrant more focused high quality studies.

Two further reviews of specific areas yielded firmer conclusions: That multi-component behavioural interventions and bright light therapy for sleep led to improved sleep quality (Salami, Lyketsos & Rao, 2002) and that cognitive stimulation had cognitive and wider psychosocial benefits (Woods *et al.*, 2012). Carrion *et al.*'s (2015) review found that cognitive interventions such as reality orientation had significant positive effects on cognitive

functioning in six of the nine studies reviewed and two studies found a positive impact of cognitive interventions on depression.

In addition to these reviews, a small RCT (Lam, Lui, Luk *et al.*, 2010) comparing individualized activity programmes with general OT found some benefit on apathy and mood, and a larger RCT (Ferrero-Arias, Goñi-Imízcoz, González-Bernal *et al.*, 2011) also found reduced apathy from a multi-component intervention involving art, music and movement, although this did not impact upon disturbed or distressed behaviours.

### ***Interventions with family carers***

We located three reviews and three high quality studies published since 2008 (table 4).

#### TABLE 4 ABOUT HERE

One systematic review of 11 RCTs (Vernooij Dassen, Drakovic, McCleery & Downs, 2011) and an RCT in 2012 (Menn, Holle, Kunz *et al.*) suggested that interventions focusing on cognitive reframing and support for carers have no effect on time to institutionalisation, and an RCT by De Rotrou, Cantegreil, Faucounau *et al.* (2011) also had a negative result, indicating that psycho-education for caregivers had no significant effect on the functional status of the person with dementia. Liddle, Smith-Conway, Baxter *et al.* (2012) examined the effectiveness of a memory and communication training programme for caregivers in a pre-post, controlled study. Although caregiver knowledge of communication support strategies improved, the intervention failed to have a significant impact on the wellbeing of those with dementia. An RCT by Huang *et al.* (2014) found a home-based training programme improved carer preparedness, competence, and self-efficacy. However, the programme had a limited impact on the person with dementia although it did reduce physically aggressive behaviour. However, a meta-analysis (Brodaty & Arasaratnam, 2012) and a systematic review (Corbett,

Stevens, Aarslan *et al.*, 2012) both concluded that psychosocial interventions, including information provision for caregivers, reduced behavioural and psychological symptoms in people with dementia.

### ***Interventions in residential care settings***

We found 16 reviews and 13 studies focused on evaluating interventions in care settings published since Olazarán *et al.*'s (2010) review. Of these 20 were primarily concerned with intervening to reduce behavioural problems. By contrast, only nine studies focused on the impact of interventions on the other outcomes. In the summary of findings below, we have first of all summarised studies addressing behavioural problems, and have then considered those that address outcomes of cognition, everyday functioning (ADLs), mood and quality of life respectively (See table 5).

#### TABLE 5 ABOUT HERE

All except two of the papers which considered reduction of behavioural problems found at least some evidence for benefit. The interventions included staff training, multi-disciplinary meetings and case conferences, manipulation of environmental cues, a wide range of psychosocial and sensory therapies, music therapy and yoga.

Regarding outcomes on cognitive functioning, music therapy (Blackburn & Bradshaw, 2014; Narme *et al.*, 2014; Raglio, Bellelli, Mazzola *et al.*, 2012) was not found to have a beneficial impact and the impact of physical activity was not convincing (Christofolletti, Olrani, Gobbi *et al.*, 2008). However, cognitive rehabilitation techniques (Hopper, Carey, Caprio *et al.*, 2013), way-finding training (Letts, Minezes, Edwards *et al.*, 2011) and individual reminiscence therapy (Subramaniam & Woods, 2013) had positive effects.

Multi-sensory (Collier, McPherson, Ellis-Hill, Staal, & Bucks, 2010) , multi-modal (Luttenberger, Donath, Uter, & Graessel, 2012) and environmentally-based interventions (Padilla, 2011) were all found to have positive impacts on the performance of ADLs, as were activities based on the need-driven, dementia-compromised approach (Kolanowski, Litaker, Buettner, Moeller, & Costa, 2011). This approach proposes that people living with dementia have needs in common with those without dementia (e.g. for purposeful activity or emotional security) but their ability to communicate these needs is compromised by cognitive impairment. In this context, people with dementia can gain satisfaction and lower expressed frustration when provided with personally tailored activities, that are chosen to be appropriate for their abilities. Livingston et al.'s (2014) review of psychosocial interventions found person-centred care, communication and skills training, and dementia care mapping reduced agitation and had a sustained impact.

Whilst physical therapy (Treusch et al., 2015; Potter et al., 2011) had no demonstrable impact on mood, Padilla et al. (2011) concluded there was evidence for short-term modest benefit from the varied environmental interventions they reviewed, and Subramaniam and Woods (2012) and Kolanowski (2011) also concluded there were some positive benefits from reminiscence and need-based activities, in the latter case for general affect rather than depressed mood. Yoga also had a positive effect (Fan & Chen, 2011).

Finally, regarding quality of life, benefit was noted from the only study of physical therapy in Potter et al.'s (2011) review that included quality of life as an outcome, as well as from reminiscence (Subramaniam & Woods, 2012) and needs-based activities (Kolanowski, 2011). However O'Shea et al.'s. (2014) study found no significant impact of reminiscence on quality of life. A pilot RCT which trained staff to recognize awareness in residents with severe dementia found that carers perceived benefit for the person with dementia's quality of life though staff did not perceive any change (Clare et al., 2013).

### ***End-of-life care interventions***

Olazarán et al.'s (2010) did not locate any studies of psychosocial interventions towards the end-of-life whereas our search found three systematic reviews and two studies (see table 6).

#### TABLE 6 ABOUT HERE

Two reviews (Harrison-Dening, Jones & Sampson 2011; Robinson, Dickinson, Rousseau *et al.*, 2012) focused on advanced care planning (ACP) interventions. Harrison-Dening *et al.*'s (2011) review of 11 studies concluded that the evidence-base exploring the acceptability and feasibility of ACP remains inconclusive. Robinson *et al.*'s (2012) review of four studies found some positive impact of ACP, for example reduction in hospital admission rates (Caplan, Meller, Squires *et al.*, 2006; Molloy, Silberfeld, Darzins *et al.*, 2000). Sampson *et al.*'s (2011) findings from a pilot RCT study did not support the efficacy of an ACP intervention.

Hall, Kolliakou, Petkova *et al.*'s (2011) review of the effectiveness of multi-component palliative care service delivery interventions included three studies. The studies focused on process outcomes and some positive impact was found. Studies reported higher satisfaction (Casarett, Pickard, Bailey *et al.*, 2005), lower discomfort for the person with dementia (Kovach, Wilson & Noonan, 1996) and fewer hospital admissions (Casarett, 2005). Hanson *et al.*'s study (2011) found that decision aids reduced decisional conflict with regard to end-of-life feeding options.

### **Discussion**

#### ***Dominance of research on reducing behavioural difficulties in residential settings***

This review provides a snapshot of developments in research between 2008 and 2015 on psychosocial interventions for dementia. One finding which stands out is that many more

studies were focused on intervention in care homes than on care in the community, and, within these the major focus was on management of ‘challenging behaviour’ and/or ‘behavioural and psychological symptoms’ of dementia (BPSD). BPSD is a term that describes a disparate collection of behaviours and emotional responses experienced or witnessed in people living with dementia that are not usually thought to be cognitive in nature (Ballard *et al.*, 2001). Many different interventions were found to produce reductions in BPSD, though in the case of reviews results varied across studies.

With such a wide range of interventions being applied to such a non-specific construct, it is hard to tell the underlying mechanisms that produce benefit. The term BPSD itself can be criticised both because of its breadth (including issues as diverse as hallucinations, eating problems and restlessness) and because of its non-person-centred conceptualisation. It is possible that some effective interventions, such as yoga and music may reduce certain aspects of ‘BPSD’ through soothing and calming qualities, whilst staff training, case conferences and case reviews may reduce distress through enabling holistic person-centred care.

The terms BPSD and challenging behaviour cover a disparate behaviours, some of which are connected with communication of distress or frustration (i.e. needs-driven dementia-compromised behaviours, Algase *et al.*, 1996) whilst others are usually frank psychiatric symptoms (e.g. hallucinations). Some next logical steps in this area, which would take forward understanding of how various approaches impact on particular non-cognitive aspects of dementia care, could be to undertake studies that aim to focus separately on discrete aspects of BPSD rather than treating the broad spectrum of issues as a single construct.

In addition, as so much research is already available, we would argue that there is a pressing need to research effective ways of more widely implementing known good practice of the sort summarised above, for example testing whether ensuring the presence of dementia specialists (Brooker *et al.*, 2012; Perry *et al.*, 2011), case conferences (Reuther *et al.*, 2012) or staff training (Spector *et al.* 2012) provide effective ways of sustaining evidence-based care that avoids the development of behavioural distress.

### ***Long term and sustainable interventions***

Intervention studies that demonstrated positive change, both in residential care and community settings, often only provided immediate or short-term outcome data, and indeed many interventions lasted only 6-12 weeks. This limits conclusions, and begs future research to address the sustainability and longer-term effects of intervention. In addition to work directly with people with dementia and their families, a number of papers considered systems-level interventions (primary care vs mental health care; case conferences; training of staff). Understanding how to gain changes in care culture is particularly important following the recent exposure of institutional level failures (Francis, 2013) and further studies of this nature could help to transform quality of care.

### ***Need for studies on care in the community, person-centred outcomes, and end-of-life care***

This overview suggests research continues to be concerned with control of behaviour in institutional settings, as opposed to either care in the community or enrichment of quality of life for people living with dementia. One good example of a study that aimed to improve quality of life for people with dementia in the community is Brooker's (2011) study on enriched opportunities for people living in extra care housing. This study rigorously tested a meaningful individually-tailored intervention and the outcomes (quality of life, depression and moves to institutional care) reflect dimensions of life important to people with dementia,

as well as to those ‘managing’ them. The small number of studies on end-of-life care reflects a need for further research on interventions to ensure best possible care for those with very advanced dementia.

### ***High number of reviews***

We found many more reviews than reports of high-quality empirical studies, reflecting a wish to take stock of the field, and perhaps also indicating areas in which groups are intending to carry out research. Several reviews (e.g. Kim et al., 2012; Lam et al., 2010) considered the effectiveness of occupational therapy interventions in particular. These serve to promote a profession that has a lot to offer the field. Without wishing to perpetuate professional divisions, this could perhaps usefully be emulated by other professions allied to medicine.

### ***Areas lacking research***

A number of the reviews used sophisticated systematic methodology but identified so few papers that they could only conclude that there was insufficient evidence to draw conclusions (e.g. Forrester et al., 2014). This lack of research was also reflected in reviews of disparate areas where researchers had clustered together varied studies (e.g. Livingston et al., 2014; Caddell & Clare, 2011; Richter, Meyer, Mohler et al., 2012). Areas indicated through these routes as requiring further high quality research studies include evaluation of the effectiveness of interventions to change behaviour of primary care practitioners, to enhance sense of self and identity, to maintain perceptual abilities and to look at the impact of physical therapy. Small scale exploratory studies are being published in some of these areas, and this underlines that systematic reviews that include a wide bracket of studies of different designs can be useful in informing programmatic development (e.g. Letts, 2011).

### ***Need for designs that explain individual differences***

The RCTs and controlled studies we reviewed generally met expected standards for design, and allowed conclusions to be drawn about between-group differences. However, some authors, (e.g. Woods, 2012, in relation to reminiscence; Kolanowski, 2011, in relation to activities for those in care homes) drew attention to individual variability in outcomes, as might be expected given participants' unique life histories, experiences and temperaments. The designs and analyses that were employed were not usually sophisticated enough to explain individual variability in response. Designs based on theoretical models (e.g. adjustment models; pathways to care; the enriched model of dementia) and sophisticated techniques (path analysis, compliance analyses) would be helpful in moving beyond demonstration of small general differences to assisting understanding of who benefits from what, enabling targeting of services to those most likely to gain benefit. Amongst the papers that paid good attention to theoretical conceptualization of interventions were those by Kolanowski *et al.* (2011) and Brooker *et al.* (2011). Further theory-driven work would help to move the field forwards.

### ***Limitations***

This review has a number of limitations. It is possible that our search terms may have led to the omission of research in specialist areas that were not captured by the relatively general search terms. However, it is acceptable for searches for this type of overview to take a broad stance (Armstrong *et al.*, 2011). In addition, although we focused on controlled studies and systematic reviews, we did not carry out methodological evaluation of the papers that were included in the many reviews. To enable transparency on this point, we have indicated the number of RCTs included in each review. Twenty-six comprised all or a majority of RCTs with 5 having a minority and 3 including none. These three reviews

included two where random allocation would pose ethical issues (moving to a profit or not-for-profit care setting, and end-of-life care) and one from the emergent area of cognitive rehabilitation where within-subject designs have been common.

### *Conclusion*

The Interdem Manifesto, produced by a European network of dementia care researchers (Moniz-Cook, Vernooij-Dassen, Woods, & Orrell, 2011) stresses the progress that has been made in the development and rigorous evaluation of psychosocial interventions. The manifesto recommended that future research should: Focus on interventions which add to purpose, pleasure, dignity and autonomy of people with dementia; both build and draw on theoretical conceptualisations; use appropriate outcome measures, especially to assess costs and value; consider how to facilitate widespread implementation; and ensure international learning and collaboration.

The years since 2008 have seen considerable advances in the evidence base for psychosocial interventions. Echoing some of the recommendations of the Interdem Manifesto, there is still a pressing need for future research to focus on aspects of quality of life for people with dementia that go beyond reducing behavioural distress, to design and test interventions based on theoretical frameworks, and to consider how to facilitate widespread implementation. People with dementia and their families need further research focused on the two ends of the dementia trajectory, living well in the community with early dementia, and maintaining quality of care at the end of life. Additional research on systems issues could help to ensure we know how to apply knowledge in practice in a way that changes culture and ensures sustained person-centred care.

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**Conflict of interest statement**

None declared

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Table 1. Number of studies for each theme.

<b>Theme</b>	<b>Systematic reviews</b>	<b>RCTs and controlled studies</b>
Living at home with dementia	8	5
Interventions/reviews with mixed samples across community and residential care settings	6	2
Intervention through family members/friends	3	4
Care home research	16	12
End-of-life care	3	2

Table 2. Papers focused on interventions directed to people with dementia living in the community (ordered by date and author).

Study	Focus	Design	Outcome variables	Findings
Brooker et al. (2011)	Efficacy of an enriched opportunities programme to improve QoL in extra care housing	Cluster RCT 10 care homes	QoL Depression Move to institutional care	Significant positive impact on all outcome measures
Kurz et al. (2011)	Cognitive-focused IVs in MCI and dementia	Systematic review and meta-analysis of 33 RCTs	Cognitive functioning Activities of daily living Attainment of individual goals	Positive impact on cognitive functioning Single trial evidence only for impact on ADLs and goal attainment
Low et al. (2011)	Evaluate outcomes of case management (CM), integrated care (IC), and consumer directed care services (CD)	Systematic review of 35 studies, (28 summarised in tables). 13/28 RCTs,	ADLs Uptake and use of services Admission to institutional care	CM: Improved ADLs and appropriate use of medicines; increased use of community services; reduced nursing home admissions. IC: Increased service use, no improvement in clinical outcomes. CD: Increased satisfaction with care and community service use. No effect on clinical outcomes.
Perry et al. (2011)	Effects of educational IVs for primary dementia care	Systematic review of 4 RCTs and 1	Quality of dementia care Detection of dementia Knowledge and attitude of PCPs	Improvement in at least 1 study for QoL of pwd and quality of care. However, training was combined with appointment of dedicated dementia care managers.

	practitioners (PCPs) on people with dementia and quality of care	controlled trial (1904 PCPs).		Training only: impact on knowledge, minimal impact on attitude, possible impact on detection.
Potter et al. (2011)	Effects of physical therapy on physical functioning, QoL and depression	Systematic review of 13 diverse RCTs	2/13 studies considered psychological outcomes (QoL, depression) in community settings	1 of 2 studies found improved depression. 1 study assessed QoL and found it improved
Kurz et al. (2012)	Acceptability, feasibility, efficacy and usefulness of cognitive rehabilitation	RCT (n = 201)	ADLs	No impact
Meeuwssen et al. (2012)	Impact of post-diagnostic dementia treatment being provided by GP clinics or specialist memory clinics on people with dementia and carers	RCT (n=175)	Caregiver rated QoL of pwd Sense of competence of caregiver	No significant differences between conditions
Woods et al. (2012)	Effectiveness and cost-effectiveness of reminiscence groups for pwd and family carers, <12 dyads per	RCT (24 dyads)	Self reported QoL Self reported carer distress Autobiographical memory ADL Carer stress/mood	No significant benefits

	group, over 12 weeks		Relationship quality Service use/costs	
Regan et al. (2013)	Psychological interventions to reduce depression, anxiety in early dementia and MCI	Systematic review. 7 RCTs and 8 pre/post studies	Adjustment Depression Anxiety	Varied interventions made comparisons difficult. Modified CBT demonstrated some efficacy and 10 studies found some improvement in outcomes
Van't Leven et al. (2013)	Effects of dyadic psycho-social interventions	Systematic review 50 studies of which 23 RCTs	Behavioural problems Mood Daily activities QoL Institutionalisation	Studies which focused on aspect of functioning found some beneficial impact of dyadic psychosocial interventions.
Farina et al. (2014)	Impact of exercise IVs on cognition in people with AD	Systematic review of 6 RCTs	Cognitive functioning	Exercise had a positive impact on cognitive functioning.
Samus et al. (2014)	Home-based care co-ordination of elders with memory disorders	Pilot RCT IV= 110 Control = 193	Time to transfer out of home Unmet care needs QoL	Significant effect on time to transfer out of home. No significant difference in reduction of unmet care needs. Significant improvement in QoL but no significant difference in proxy rated QoL, neuropsych symptoms or depression
Leung et	Effectiveness of social group interventions for	Systematic review, 2	Depression QoL	Logsdeon et al. (2010) found a social group intervention significantly reduced

al. (2015)	people dementia and MCI	RCTs and 1 ongoing RCT.	Self esteem	depression and improved QoL. Burgener et al. (2008) found no significant effect on depression but social groups improved self-esteem.
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KEY: Pwd = People with dementia; AD = Alzheimer's disease; IV = Intervention; QoL = Quality of life; ADLs = Activities of daily living; MCI = Mild Cognitive Impairment

Table 3. Papers on interventions for mixed community and institutional samples of people with dementia (ordered by date and author).

Authors	Focus	Design	Outcome variables	Findings
Blankevoort et al. (2010)	Effects of physical activity on strength, balance, mobility and ADL performance	Systematic review of 16 studies (10 RCTs) of which 4 looked at outcome on ADLs	ADLs	Multi-component interventions were associated with improvement in ADLs
Lam et al. (2010)	Effects of individualised goals, using a cognitive behavioural approach, for Occupational Therapy (OT) on functional skills and mood	RCT (37 per group) comparing individualised activities with general OT	Process skills Motor skills Depression Apathy	No group differences in process or motor skills. Apathy improved at 1month and depression at 4months compared with control.
Caddell & Clare (2011)	IVs to support self and identity in pwd	Systematic review of 10 very diverse studies, including 2 RCTs	Identity and sense of self	All showed some benefit but quality was generally poor
Ferrero-Arias et al. (2011)	Usefulness of a non-structured non-pharmacological IV (music/art/psychomotor activities) for apathy	RCT (n=146) with cross over design, 4 weeks each condition	Apathy Disturbed or distressed behaviour	Apathy improved in intervention group. No significant difference in disturbed/distressed behaviours
Salami et al. (2011)	Qualitative and quantitative evidence on sleep disturbance	Systematic review of 38 studies, including 18	Quality of sleep	Bright light therapy (12 studies) improved sleep quality. Behavioural and multi-facetted IVs had

		studies (9 RCTs) of non-pharmacological IVs.		positive impact in 4/5 studies.
Cooper et al. (2012)	Effectiveness of non-pharmacological IVs to improve QoL of pwd	Systematic review of 20 RCTs of diverse IVs	QoL	Group cognitive simulation therapy improved QoL in 1 care home study. Some evidence to support carer coping strategy-based interventions
Kim et al. (2012)	Effects of OT on behavioural problems	Meta-analysis of 9 RCTs, n=751	Behavioural problems	Sensory stimulation improved behavioural problems. No evidence for benefit from environmental modifications or functional task activities
Woods et al. (2012)	Impact of cognitive stimulation	Cochrane review of 15 RCTs. Meta-analysis (n=718) of cognitive change	Cognition QoL Communication Social interaction Mood ADLs Problematic behaviours	Clear consistent benefit on cognition maintained at 1-3months. Improvement in self-rated QoL and staff rated communication & social interaction. No differences in mood, ADLs, behaviour.
Carrion et al. (2013)	Cognitively focused IVs	Review of 17 RCTs or controlled trials: 9 of reality orientation with moderate-severe	Cognition, communication, functional status, skills,	Positive effects on cognition in most trials, significant in 6/9 of reality orientation and 1/8 of skills training. Little evidence of impact on other variables, though 2 studies found positive

		dementia; 8 of skills training with people with mild-moderate dementia.	behaviour, mood	impact on depression.
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KEY: Pwd = People with dementia; IV = Intervention; QoL = Quality of life; ADLs = Activities of daily living; Sys rev = Systematic review

Table 4. Papers on interventions conducted with family carers to enhance quality of life for people with dementia (ordered by date and author).

Study	Focus	Design	Outcome variables	Findings
DeRotrou et al. (2011)	Do pwd benefit from a psycho-educational programme for carers	RCT: Control = 58 dyads, Intervention = 57 dyads	Functional status	No significant impact on the functional status of persons with dementia
Vernooij Dassen et al. (2011)	Effect of cognitive reframing on carer psychological morbidity and institutionalisation of person with dementia	Systematic review of RCTs (11 trials)	Carer burden, anxiety, depression, subjective stress. Reaction to pwd Institutionalisation	No effect on carer burden, reaction to pwd behaviour or institutionalisation. Positive effect on carer anxiety, depression and subjective stress
Brodaty et al. (2012)	Effectiveness of psychosocial interventions delivered by carers	Meta-analysis of 23 studies (16 RCTs, 7 'pseudo-randomised CTs) 3, 279 dyads	BPSD Carers' reactions to symptoms	Reduction in behavioural and psychological symptoms in persons with dementia. Interventions were also effective in improving carers' reactions to symptoms.
Corbett et al. (2012)	Are information services beneficial for quality of life, neuropsychiatric symptoms and carer burden	Systematic review of 13 RCTs	Carer burden Pwd neuropsych symptoms	No effect on carer burden. Significant benefit for neuro- psychiatric symptoms.
Liddle et al.	The effectiveness of a memory and communication	Pre/Post controlled trial: Control = 16	Carer knowledge	Significant improvement in carer knowledge of memory and communication support

(2012)	training programme for carers on carer experience and the wellbeing of persons with dementia	dyads; Intervention = 13 dyads	Pwd well being	strategies. No improvement in wellbeing of persons with dementia
Menn et al. (2012)	To compare carer counselling, carer support groups and usual care from GPs in terms of time to nursing home placement	Cluster RCT: Usual care = 171; Carer support group = 109; Counselling = 110	Institutionalisation	No effects on time to institutionalisation or secondary carer outcomes.
Huang et al. (2014)	Effect of home-based training on carer skills and aggressive behaviours of the person with dementia	RCT Intervention = 63 Control = 66	Carer preparedness, competence and self efficacy  Pwd aggressive behaviours	Significate improvement in carers outcomes. Reduction in physically aggressive behaviours.

KEY: Pwd = People with dementia; RCT = Randomised Control Trial; IV = Intervention; QoL = Quality of life; ADLs = Activities of daily living; Sys rev = Systematic review

Table 5. Papers concerning interventions for people with dementia in care homes (ordered by date and author).

Study	Focus	Design	Outcome variables	Findings
Christofoletti et al. (2008)	Effects of motor IV on balance and cognition	RCT, n=54; 3 groups (physiotherapy + PE + occupational therapy; physiotherapy alone; control).	Cognitive functioning	Some benefit in verbal fluency and clock drawing in group 1 compared with group 3
Comondore et al. (2009)	Quality of care comparison between profit and not-for-profit care homes	Systematic review of 82 non-randomised studies	Quality of care	Not for profit care homes delivered higher quality of care
Collet et al. (2010)	Efficacy of integrated psychiatric and nursing home care	Systematic review of 8 studies (7 RCTs)	Behavioural problems	7/8 studies showed a reduction in severe behavioural problems.
Collier et al. (2010)	Efficacy of multi-sensory stimulation on functional performance	RCT (IV n=17; control n=13)	Functional performance	Improvements in functional status for both groups. Under powered study.
Fan et al. (2011)	Effects of yoga on physical and mental health	Quasi-experimental (IV n=33; control n=35)	Depression 'Problem behaviours'	Significant improvements in IV group for both outcome variables

Kolanowski et al. (2011)	Effects of activities derived from the needs driven, dementia compromised behaviour model	RCT (n=128)	Agitation, passivity, engagement, affect, mood.	Improvements in all except mood.
Letts et al. (2011)	Effects of IVs designed to modify/maintain perceptual abilities	Systematic review of 28 studies (10 systematic reviews/meta-analyses/RCTs) including compensatory IVs (e.g. light intensity; environmental design) and IVs to change sensory function (e.g. sensory stimulation)	Occupational performance	Visual barriers, including concealed doors, reduced 'exiting behaviour'. Some short-term gains from way-finding IVs. Only preliminary evidence for benefit from changing sensory function.
Padilla et al. (2011)	Efficacy of environment-based IVs	Systematic review of 33 studies and reviews (17 reviews, 9 RCTs); of very varied interventions (e.g. music therapy, bright light therapy, Snoezelen, Montessori techniques).	Affect Behaviour Functional performance	IVs found to have modest short term effects
Lin et al.	Effectiveness of a	RCT (IV, 49; control 51)	Agitated and aggressive	Reduction in agitated behaviours and

(2011)	group music therapy IV		behaviours	physical aggression
Luttenberger et al. (2012)	Efficacy of a multi-modal non drug therapy (motor stimulation + cognitive stimulation + performance of ADLs)	RCT (5 nursing homes, 130 participants)	Symptoms of dementia. Care needs.	Improvements in overall dementia symptoms, social behaviour and instrumental ADLs. No effect on functional independence or total care time.
Raglio et al. (2012)	The impact of music therapy	Systematic review; 32 RCTs or controlled trials of which 20 looked at outcome on 'BPSD' and 6 on cognition	'BPSD' Cognition	Active music or music therapy reduced BPSD. Insufficient evidence re cognition
Reuther et al. (2012)	Efficacy of case conferences as IVs	Systematic review of 7 studies (4 cluster RCTs)	'Challenging behaviour'. Impact on staff.	4/7 found a reduction in 'challenging behaviours'. 5/7 found an influence on staff competence, attitudes and job satisfaction
Richter et al. (2012)	Effectiveness of psycho- social IVs to reduce use of anti-psychotics.	Systematic review; 4 cluster RCTs, all complex IVs (e.g. education, training, multi-disciplinary meetings)	Anti-psychotic drug use	All reported a decrease in use of anti-psychotics
Seitz et al. (2012)	Impact of non-pharmacological IVs on 'neuro-psychiatric symptoms'	Systematic review of 40 RCTs of very varied IVs (e.g. music therapy, staff training).	'Neuro-psychiatric symptoms'	16 studies had significant impact on 'neuro-psychiatric symptoms'. Few high quality studies.

Subramaniam & Woods (2012)	To identify psychosocial benefits of 1:1 reminiscence therapy	Systematic review of 5 RCTs using varied IVs	Psychosocial outcomes Cognition	Some benefits to mood, wellbeing and aspects of cognitive function.
Clare et al. (2013)	Does training staff to identify signs of awareness improve quality of life	Pilot RCT (IV, 4 care homes, n=32; control, 4 care homes, n=33)	QoL of people with dementia	Improvements in family ratings of QoL but no changes in staff ratings of QoL
Hopper et al. (2013)	Effectiveness of cognitive interventions (e.g. spaced retrieval training, vanishing cues, verbal instruction/cueing)	Systematic review of 43 studies (n=556), no RCTs, mainly within-subject designs	Cognitive performance	People with mild-moderate dementia may be able to re-learn facts and procedures. Evidence for more severe dementia is limited.
Spector et al. (2013)	Effectiveness of staff training for reducing 'BPSD'	Systematic review of 20 studies (13 RCTs)	'BPSD'	Significant symptom reduction in 12 studies. No link between theoretical orientation of programme and effectiveness
Blackburn & Bradshaw (2014)	Critical review of music therapy	Critical review of 6 RCTs with people with dementia in residential care, published since 2010	Anxiety, agitation, aggression, depression, quality of life, cognitive	Generally positive findings but not clear if more impact than other interventions (e.g. reading). Active participation may be more beneficial than passive.

			functioning	
Chenoweth et al. (2014)	Comparison of impact of person-centred care (PCC), person-centred environments (PCE) and both	Stratified RCT with 4 conditions: PCC, PCE, PCC+PCE, control). 38 residential homes, 601 residents	Agitation, emotional responses, quality of life, depression, quality of interaction	QoL and agitation significantly improved for PCC and PCE but not both combined cf control. Quality of interaction and emotional response significantly improved with PCC+PCE but no other condition. No changes in depression.
Forrester et al. (2014)	Efficacy of aromatherapy for pwd	Systematic review of 7 RCTs N = 428	Agitation, Behavioural symptoms, Adverse effects QoL ADLs	1 study found significant effect of aromatherapy on agitation and behavioural symptoms. Six studies found no significant effects on outcomes.
Livingstone et al. (2014)	Non pharmacological interventions for agitation	Systematic review of 33 RCTs	Agitation	Person centred care, communication, skills training, and adapted Dementia Care Mapping decreased severe agitation immediately and up to 6 months later. Activities and music therapy decreased overall agitation immediately. Light therapy and aromatherapy did not demonstrate efficacy.
Narme et al.	Efficacy of music	RCT n = 48 Compared music	Emotional state, Cognitive state,	Both music and cooking led to positive changes in emotional state, decreased

(2014)	therapy	Vs cooking	Behavioural functioning, Professional carer stress	behavioural stress, reduced carer distress. No impact on cognitive status. Results did not demonstrate a specific benefit of music therapy.
O'Shea et al. (2014)	Impact of reminiscence on QoL	RCT Intervention = 153 Control = 151	QoL	No significant impact on resident QoL
Treusch et al. (2015)	Apathy in nursing home residents, effects of occupational and sport therapy interventions	Cluster RCT Intervention = 44 Control = 32	Apathy Severity of dementia (MMSE) Mood Depression	Immediate significant effect on apathy but not sustained. No significant impact on other outcomes.
Van Haitsma et al. (2015)	Effectiveness of individualised activities	RCT Usual care = 93 Attention control group = 43 Individualised intervention = 44	Negative affect Positive affect	Attention control group and intervention group experienced more positive affect.

KEY: IV = Intervention; QoL = Quality of life; ADLs = Activities of daily living; Sys rev = Systematic review

Table 6. Papers concerning interventions for people with dementia at end-of-life (ordered by date and author).

Study	Focus	Design	Outcome variables	Findings
Hall et al. (2011)	Effectiveness of multi component palliative care services	Systematic review; 3 RCTs (735 participants)	Mortality, quality of care, behaviour, pain, discomfort and process variables.	No differences in mortality, pain or behaviours, but quality of care rated more highly by families in one study and observed discomfort was less in one study.
Harrison-Dening et al. (2011)	Facilitators and inhibitors to advanced care planning	Systematic review; 12 studies (no RCTs, 3 with control or comparison).	Hospitalisation, treatment preferences and decisions, distress, mortality and a range of influences on these.	Limited evidence. More evidence required to understand the feasibility and acceptability of ACP
Robinson et al. (2012)	Effectiveness of advance care planning IVs	Systematic review; 4 studies (3 RCTs).	Residents and families' satisfaction with care, rates and quality of advance care planning outcomes, health,	3 studies found increased rates of completion of advance care plans and 1 found positive impact on documentation of patient preferences for care. 1 study found improved pain assessment. 2 studies reported significant reduction in hospital admissions. 1 study found increased use of hospice in IV group.

			health-care use <sup>3</sup>	
Hanson et al. (2011)	Does an audio or print decision aid improve quality of decision making about feeding options in advanced dementia	RCT (IV, 101; control, 100)	Quality of decision making about feeding options in advanced dementia	Significantly improved knowledge, reduced decisional conflict. IV group more likely to receive dysphagia diet
Sampson et al. (2011)	Palliative care patient assessment informed an ACP discussion with the carer who was given opportunity to write an ACP	Pilot study (IV, 22; control, 11)	Completion of Advance Care Plans	Only 7 carers made ACPs despite extensive support and discussion being well received.

Key: ACP = advance care plan/planning; IV = intervention; Sys rev = Systematic review