BMJ Open

Psychological interventions to improve psychological well-being in people with dementia or mild cognitive impairment: systematic review and meta-analysis protocol

Paul Farrand,[1,2] Justin Matthews,[3] Chris Dickens,[2] Martin Anderson,[1] Joanne Woodford[1]

To cite: Farrand P, Matthews J, Dickens C, *et al*. Psychological interventions to improve psychological well-being in people with dementia or mild cognitive impairment: systematic review and meta-analysis protocol. *BMJ Open* 2016;**6**: e009713. doi:10.1136/bmjopen-2015-009713

▸ Prepublication history and additional material is available. To view please visit the journal (http://dx.doi.org/10.1136/bmjopen-2015-009713).

Received 14 August 2015
Revised 19 October 2015
Accepted 18 November 2015

For numbered affiliations see end of article.

Correspondence to
Professor Paul Farrand;
p.a.farrand@exeter.ac.uk

ABSTRACT

Introduction: Dementia and mild cognitive impairment are associated with an increased risk of depression, anxiety, psychological distress and poor mental health-related quality of life. However, there is a lack of research examining the evidence base for psychological interventions targeting general psychological well-being within this population. Furthermore, there is little research relating to the design of randomised controlled trials examining psychological interventions for dementia and mild cognitive impairment, such as effective recruitment techniques, trial eligibility and appropriate comparators.

Methods and analysis: Systematic review of electronic databases (CINAHL; EMBASE; PsychInfo; MEDLINE; ASSIA and CENTRAL), supplemented by expert contact, reference and citation checking, and grey literature searches. Published and unpublished studies will be eligible for inclusion with no limitations placed on year of publication. Primary outcomes of interest will be standardised measurements of depression, anxiety, psychological distress or mental health-related quality of life. Eligibility and randomisation proportions will be calculated as secondary outcomes. If data permits, meta-analytical techniques will examine: (1) overall effectiveness of psychological interventions for people with dementia or mild cognitive impairment in relation to outcomes of depression, anxiety, psychological distress or mental health-related quality of life; (2) clinical and methodological moderators associated with effectiveness; (3) proportions eligible, recruited and randomised.

Ethics and dissemination: Ethical approval is not required for the present systematic review. Results will inform the design of a feasibility study examining a new psychological intervention for people with dementia and depression, with dissemination through publication in peer-reviewed journals and presentations at relevant conferences.

Trial registration number: CRD42015025177.

Strengths and limitations of this study

- Review protocol adopts the following quality standards—independent study selection, data extraction, risk of bias assessments by two researchers—as informed by the Centre of Reviews and Dissemination guidance and PRISMA-P guidelines.
- The first review to be conducted with a secondary aim of examining factors related to successful participant recruitment into psychological interventions trials for dementia and mild cognitive impairment.
- To increase quality of included studies and reduce methodological heterogeneity, studies with high risk of bias (following Cochrane Collaboration guidance) concerning method of random sequence generation and allocation concealment were excluded.
- Owing to resource limitations, selected studies were limited to those publically available in the English language; therefore, language bias may be present.
- High levels of clinical heterogeneity may exist as a consequence of included studies adopting psychological interventions informed by a variety of psychological approaches and including participants with different dementia types and levels of cognitive impairment.

INTRODUCTION

While healthcare advances across the developed world have resulted in increased life expectancy,[1] increased numbers of people are also placed at risk of developing chronic health conditions.[2] As such, dementia, a common chronic condition associated with ageing,[3] has become of significant concern. Current estimates of people living with dementia worldwide are in excess of 35 million, set to double by 2030, and more

BMJ Open: first published as 10.1136/bmjopen-2015-009713 on 27 January 2016. Downloaded from http://bmjopen.bmj.com/ on May 13, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

than triple by 2050.[4] In the absence of a cure for dementia, or identification of specific causal factors as targets for preventative interventions,[5] dementia care strategies are focused on providing appropriate psychological and psychosocial support, alongside the provision of physical care.[6] However, access to evidence-based psychological therapies to improve the long-term psychological well-being and mental health-related quality of life in people with dementia is currently limited.[7]

Elevated symptoms of depression in people with dementia are common with prevalence reported to be as high as 30[8 9]–50%,[10] compared to 13.2% of older adults without cognitive impairment.[11] However, the prevalence of depression in people with dementia should potentially be considered with caution. Rates of depression may vary across dementia type, with a small number of studies indicating prevalence rates higher in patients experiencing dementia with Lewy bodies and vascular dementia, in comparison with Alzheimer's disease.[8] Large variations in rates of depression in Alzheimer's disease have also been found when a stricter criterion is adopted with respect to meeting a diagnosis of major depression.[12] Studies adopting International Classification of Diseases (ICD) 10 criteria have found rates of 5[13]–14% using DSM-IV criteria,[14] and 38[15]–44%[14] when using the National Institutes of Mental Health (NIMH) proposed standardised diagnostic criteria for depression in Alzheimer's disease.[16] Such wide variations in prevalence rates may be due to the differences in depressive symptom presentation in people with dementia and variation diagnostic criterion used in these tools.[12] In relation to mild cognitive impairment (MCI) rates of mild depressive symptoms have varied from 26.5%[17] to 49.3%,[18] with 14% experiencing severe depressive symptoms.[18] Furthermore, prevalence of elevated symptoms of anxiety have been found to range from 8% to 71%,[19] with 5–21% of people with a dementia meeting diagnostic criteria for a specific anxiety disorder.[20] However, there is little consensus concerning how to define and measure anxiety experienced by people with a dementia.[9] Rates of anxiety symptoms have also been found to vary widely in MCI (10–74%).[21]

Despite variability reported regarding the prevalence of depression and anxiety in people with dementia and MCI,[9 12] a clear need remains for evidence-based psychological therapies to address these difficulties. However, only six studies were identified in a Cochrane review examining the effectiveness of psychological interventions specifically targeting depression or anxiety.[9] Other reviews have tended to focus on the effectiveness of non-pharmacological interventions for a variety of neuropsychiatric symptoms in severe or very severe dementia.[22] Furthermore, while depression and anxiety have a significant impact on the lives of people with dementia and MCI, the negative impact of these psychological difficulties extend beyond their symptomatology alone.[8] For depression and anxiety, symptoms have been associated with reduced quality of life,[8 23] increased likelihood of being placed in a nursing home or other institution,[24 25] and caregiver burden.[26 27] Furthermore, specifically with respect to depression, higher rates of cognitive decline have been reported,[28] with increased behavioural disturbances associated with anxiety.[29]

As such, the need to develop evidence-based psychological interventions to support the long-term emotional needs of people experiencing dementia, and examine their impact on difficulties beyond those related solely with depression and anxiety, is justified. Developing interventions that enable people with dementia to 'live well' is a priority with the UK National Dementia strategy,[30] with recent research focusing on improving general well-being and quality of life to facilitate people to 'live well' with dementia.[31] However, research on dementia has previously adopted a disease-focused model, rather than a focus on longer term well-being and quality of life.[32] Indeed, a limitation of existing literature is that interventions tend to overlook outcomes relating to quality of life and general psychological well-being.[33] This is of particular importance considering the elevated stigma associated with mental health difficulties in older adult physical health populations,[34] and associated low levels of help-seeking regarding mental health support.[35 36] One reason for low levels of help-seeking behaviour may relate to the greater identification of physical health populations with the experience of general distress as a response to illness,[37] as opposed to a specific mental health difficulty, such as depression or anxiety. Subsequently, previous reviews focusing on interventions targeting medicalised constructs, such as depression or anxiety,[9] may have omitted the evidence base concerning psychological interventions targeting broader constructs relating to general psychological distress and well-being.

Currently, there are no systematic reviews examining the evidence base of psychological interventions targeted at improving general psychological well-being or mental health-related quality of life in people with dementia and MCI.[38] While a recent review[9] has examined the effectiveness of psychological interventions for people with dementia and MCI targeting depression and anxiety, this current review protocol widens the scope by also including interventions targeting general psychological distress and quality of life. Further, results of this review will allow the independent triangulation of results obtained by this previous review.[9]

As well as establishing the evidence base for psychological interventions targeting general psychological well-being in people with dementia or MCI, it may also be prudent to investigate clinical and methodological characteristics associated with these studies. A number of complexities have been identified when recruiting participants into pharmaceutical trials associated with dementia or MCI, including capacity to consent, and the presence of physical or neuropsychiatric symptoms impacting on eligibility.[38] Furthermore, a number of known barriers exist regarding recruiting older adults

BMJ Open: first published as 10.1136/bmjopen-2015-009713 on 27 January 2016. Downloaded from http://bmjopen.bmj.com/ on May 13, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

into psychological intervention trials, including stigma concerning mental health difficulties experienced by older adults,[39–41] preoccupation with physical health symptoms,[42] and lack of healthcare professional recognition.[43] Participants and professionals have also been found to view participation in depression trials with greater caution for older rather than younger adults, and for people with physical health conditions.[44] With respect to anxiety, symptoms are frequently unrecognised in older adults, given they often do not conform to existing diagnostic criteria.[45] Additionally, elevated stigma exists concerning anxiety in older adults in comparison with other mental health conditions, including depression.[41]

Greater understanding of methodological factors may, therefore, help inform successful recruitment strategies into subsequent studies aiming to examine the effectiveness of psychological interventions for people with dementia and MCI to improve psychological well-being. A recent systematic review examining recruitment in pharmacological trails for Alzheimer's disease has suggested 10% of potential participants would take part in clinical drug trials if all those diagnosed were invited to participate.[38] However, currently, no reviews exist examining factors related to successful recruitment into psychological interventions for dementia. The present systematic review, therefore, aims to identify clinical and methodological moderators associated with effectiveness and recruitment strategies for trials involving people with dementia and MCI, alongside examining the overall effectiveness of psychological interventions to improve psychological well-being.

OBJECTIVES

1. To examine the effectiveness of psychological interventions targeted at improving psychological and emotional well-being and mental health-related quality of life, compared with active and inactive control conditions, in adults with dementia or MCI.
2. To investigate clinical and methodological moderators associated with effectiveness.
3. To identify recruitment techniques and effectiveness of the techniques used across trials.

METHODS AND ANALYSIS

The Centre of Reviews and Dissemination (CRD) guidance for conducting systematic reviews,[46] will be followed, with results of the review reported in accordance with PRISMA-P guidelines.[47] The review is registered with the PROSPERO International Prospective Register of Systematic Reviews (registration number CRD42015025177).

Study inclusion and exclusion criteria

Type of studies

Randomised controlled trials (RCTs) and cluster RCTs, using a method of random sequence generation with allocation concealment assessed as having low or unclear risk of bias using the Cochrane Collaboration Risk of Bias tool,[48] will be eligible for inclusion. This is to help minimise the inclusion of studies of low quality with high of selection bias known to inflate effect sizes[49 50] and is a technique used in a number of other systematic reviews and meta-analyses.[51–53] Quasi-RCTs and cross-over trials will not be eligible for inclusion.

Types of participants

Adults with diagnosis of a dementia by the Diagnostic and Statistical Manual of Mental Disorders (DSM) IV or DSM-5 (American Psychiatric Association (APA[54 55]) ICD-10[56] alternative validated diagnostic criteria, or recorded in their medical records. Alzheimer's disease, vascular dementia, dementia with Lewy bodies and frontotemporal dementia and will be eligible for inclusion. In addition, adults with a diagnosis of MCI, a term used to describe a person experiencing problems with cognitive function, but with such difficulties not being severe enough to currently attract a diagnosis of dementia, will be eligible for inclusion. Valid methods of diagnosis adopted for MCI will include: DSM-5 criteria,[55] Petersen's criteria (P-MCI,[57]), alternative validated diagnostic criteria, or where recorded in medical records. No limitations will be placed on the severity of dementia, length of time since diagnosis, with dementia patients in community and institutional settings eligible. No restrictions will be placed on severity of depression, anxiety, psychological distress or mental health-related quality of life.

Types of interventions

The review will include any psychological therapy and includes specific interventions with no limitations placed on the psychological therapy model informing the intervention. Psychological therapies eligible for inclusion will use specific therapeutic principles and techniques hypothesised to target an improvement in psychological well-being or a reduction in symptoms associated with psychological difficulties. Psychological therapies eligible for inclusion may include, but is not restricted to: cognitive–behavioural therapies; behavioural interventions; social skills training; relaxation therapy; psychodynamic; humanistic/counselling approaches; and interpersonal therapies. The intervention should target an improvement in general psychological well-being as identified by measurement of depression, anxiety, psychological distress or mental health-related quality of life. As long as the intervention is targeted at improving psychological well-being in the person with dementia or MCI, dyadic interventions that may additionally target the informal carer will also be eligible. Additionally, all intervention delivery modes (individual, group or dyadic) and methods of support (face to face, telephone, internet) will be eligible for inclusion. There will be no limitations placed on the professional background of the person supporting the intervention; additionally unsupported

BMJ Open: first published as 10.1136/bmjopen-2015-009713 on 27 January 2016. Downloaded from http://bmjopen.bmj.com/ on May 13, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

(self-guided/self-administered) interventions will also be eligible for inclusion.

Both inactive and active comparators will be considered eligible. However, the trial design must allow for the isolation of the effect of the psychological intervention of interest. Examples of appropriate designs are as follows:

1. Psychological intervention versus control (no-treatment control; wait-list control; treatment as usual);
2. Psychological intervention versus non-specific factor component control,[58] (eg, where therapist time is equivalent to that provided in the experimental arm but only non-specific factors are provided as an intervention);
3. Psychological intervention plus medication versus medication;
4. Psychological intervention plus information versus information.

Types of settings

There will be no restriction placed on setting of intervention delivery. For example, studies where the intervention was delivered in primary care, secondary care, university-based clinics, homes, residential care homes and community settings will all be included.

Types of outcome measures

Studies eligible for inclusion will use one or more of the following self-report, clinician or proxy administered primary outcome measurements: (1) standardised measurement of depression (eg, the Beck Depression Inventory, BDI-II,[59]); (2) standardised measurement of anxiety, (eg, the Beck Anxiety Inventory, BAI[60]); (3) standardised measurement of psychological distress, defined as a measurement of general psychiatric distress including domains of mental health-related symptoms such as depression, anxiety, insomnia and somatic symptoms (eg, the General Health Questionnaire, GHQ[61]); or (4) standardised measurement of quality of life if they include a mental health-specific subscale or domain (eg, the SF-36[62]) or the Alzheimer disease-related quality of life (ADRQL[63]). Where multiple time points are reported, a primary end point ≤6 months post-treatment will be adopted to minimise the likelihood bias associated with examining short-term post-treatment effects only that are likely to result in higher effect sizes.[64 51 65] However, outcomes for all time points reported in the included studies will be extracted to enable a potential moderator analysis on length of follow-up.

Search methods for identification of studies

Electronic searches

The following electronic databases will be searched: Cumulative Index to Nursing and Allied Health Literature (CINAHL); Excerpta Medica DataBase (EMBASE); PsychInfo; MEDLINE; Applied Social Sciences Index and Abstracts (ASSIA) and the Cochrane Central Register of Controlled Trials (CENTRAL). A comprehensive search strategy was developed using medical subject headings (MeSH). The Ovid MEDLINE search strategy can be found in online supplementary file 1. No limitations will be placed on year of publication, and only studies which are publically available in the English language will be eligible for inclusion due to limited resources to funding translation services.

Searching other resources

The reference lists and citations of all included studies will be hand searched for further eligible studies. In addition, journals containing the highest numbers of included studies will be hand searched for recent potentially eligible publications (≤12 months). Experts in the field will also be contacted to identify any unpublished or ongoing trials.

Data collection and analysis

Selection of studies

Two researchers will act as reviewers and screen titles and abstracts. Full paper reviews will be conducted independently to determine inclusion with all discrepancies initially discussed. If consensus cannot be reached, a third member of the research team (PF) will be contacted. An Excel spreadsheet has been developed to manage all review data.

Data extraction and management

Following guidance,[46] data will be double extracted by the two reviewers (JW and MA) using a data extraction form developed in Excel for this review, with discrepancies discussed and the third member of the review team (PF) contacted if consensus is not reached. Study characteristics will be extracted from published papers, with study authors contacted in the event of missing data. In addition to the extraction of standard study information (study identification features, study characteristics, primary outcome measurements, statistical approaches and primary results) the following information will also be extracted:

1. *Participant characteristics*: dementia subtype (eg, Alzheimer's disease, vascular dementia, dementia with Lewy bodies, frontotemporal dementia, MCI); how diagnosis of dementia or MCI was established (eg, patient record check or in-trial procedures; validated diagnostic tool for dementia used (eg, DSM-IV, DSM-V or ICD-10); global severity of dementia; severity of cognitive impairment; severity of behavioural and psychological symptoms of dementia; time since diagnosis; physical health comorbidities; neuropsychiatric comorbidities; age; gender; ethnicity; educational status; support from an informal carer (yes/no).
2. *Intervention characteristics*: psychological model (eg, cognitive therapy, behavioural therapy, interpersonal therapy; psychoeducation; problem-solving;

BMJ Open: first published as 10.1136/bmjopen-2015-009713 on 27 January 2016. Downloaded from http://bmjopen.bmj.com/ on May 13, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

psychosocial support; relaxation); mode of delivery (eg, individual, group, dyadic); type of support (eg, face-to-face, telephone, email); treatment setting (eg, community, care home, primary care, secondary care); clinician delivering treatment; intervention-specific training of clinicians delivering the treatment; treatment duration; number of sessions; length of sessions; manualised treatment and measurement of treatment integrity.

3. *Recruitment characteristics*: patient or dyadic (patient and carer); type of consent (eg, informed, proxy); sampling method; recruitment setting (eg, clinical, community, mixed); type of recruitment (eg, mail-out, physician/healthcare professional referral, advertisement); number of participants invited, number of participants screened, number of participants eligible, number of participants randomised, reasons for non-eligibility, whether respondent characteristics match the target population defined as response rate ≥80% or appropriate analysis comparing respondent and non-respondent characteristics.[38]
4. *Statistical approaches and primary results*:
   4.1 Consistent with the aims of intention-to-treat analysis, any outcome information available for patients excluded from the original analysis will also be extracted.
   4.2 For cluster trials, estimates of intracluster correlation coefficients (ICC) and average cluster sizes will be gathered, which are potentially needed for revised analyses (see Unit of analysis issues section).
   4.3 Within-study correlations between different outcomes will be extracted, where available, to inform on the simultaneous effects of treatment on the outcomes of interest in the same participants.

Assessment of risk of bias

The methodological quality of included studies will be examined independently by the two reviewers using the Cochrane Collaboration's Risk of Bias tool.[48] Study quality ratings will be compared, discrepancies discussed, and the third reviewer (PF) contacted if consensus is not reached. Specifically, selection, performance, attrition and reporting bias will be examined. Reporting bias will be examined by making efforts to obtain study protocols (eg, obtaining published protocols, checking trial databases or requesting from study authors) and comparing outcomes reported in the protocol with those reported in the paper. Additionally, comparisons will be made between outcomes reported in the methods and results sections of trial reports. Study authors will be contacted in the event of any discrepancy to identify potential changes to the study protocol and request any missing data. For cluster-randomised trials, studies will be examined for 'unit-of-analysis' errors,[66 67] whereby groups were randomised in the trial, but individuals were treated as the randomised units in analysis. Cluster trials will also be assessed for 'recruitment bias' in which individuals are recruited after cluster randomisation, with knowledge of cluster allocation.[68]

Data synthesis and statistical analysis

Measures of treatment effect

If available data permits, a meta-analysis will be conducted using 'metafor' package in R.[69] Hedges' g will be calculated to determine the post-treatment between-group standardised mean effect size from outcomes relating to depression, anxiety, psychological distress and mental health-related quality of life separately. In cases reporting multiple time points, the longest follow-up time point will be adopted ≤6 months. Comparisons will be analysed separately with control condition sample size halved for studies where two treatments eligible for inclusion are compared with one control condition. Likewise, for studies comparing two control conditions with one treatment condition, comparisons will be analysed separately with the sample size in the treatment condition halved. A random effects model will be adopted as wide variations in treatment, participant characteristics and methodological factors are expected between the studies.[70 71]

Unit of analysis issues

For cluster RCTs, if clustering was not appropriately considered in the original analysis, estimates of ICC and average cluster sizes will be used to increase the SEs appropriately.[68] If the required information cannot be obtained from source, authors will be contacted directly, or values borrowed from similar studies if possible.

Summary proportions

To examine recruitment and data permitting, summary proportions will be calculated.[69] Effects will be reported as proportions but transformed to log (odds) for the purposes of the meta-analysis. Specifically, the following proportions will be included:

1. Proportion of participants invited into the trials and subsequently screened for eligibility.
2. Proportion of participants screened for eligibility in the trials and subsequently found to be eligible for inclusion.
3. Proportion of participants found eligible for study and subsequently randomised into the trials.

Dealing with missing data

Missing means and SDs of post-treatment measurement scores will be requested from authors. The intention-to-treat principle will be followed as far as possible, analysing all patients as they were randomised. Sensitivity analysis will be conducted by temporarily dropping studies with high attrition in at least one arm (≥30%) from the analysis.

Assessment of heterogeneity

The presence of statistically significant heterogeneity will be examined by calculating the Q statistic with the

BMJ Open: first published as 10.1136/bmjopen-2015-009713 on 27 January 2016. Downloaded from http://bmjopen.bmj.com/ on May 13, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

quantification of the degree of heterogeneity calculated using the I^2 statistic.[72 73] If substantial heterogeneity is found (I^2 value ≥50%), possible causes will be examined through subgroup analyses.

Funnel asymmetry

To investigate sources of possible bias (publication bias, language bias, inclusion of small studies with poor methodological rigour, heterogeneity), funnel plot asymmetry will be examined using Egger's Test of the Intercept,[74] where a minimum of 10 studies are included within the analysis.[75] Separate funnel plots will be calculated for each of the main outcomes (depression, anxiety, psychological distress and mental health-related quality of life). Effect sizes for each outcome will also be calculated taking into account the potential of bias using the trim and fill procedure.[76]

Sensitivity analysis

Sensitivity analysis will be conducted by

1. Temporarily dropping small studies (n≤20 across conditions).
2. Individually omitting each study from the meta-analysis to examine whether the effect size was biased by the inclusion of any particular study.
3. Selective outcome reporting bias,[77] will be examined using the maximum bias-bound approach,[78 79] with new treatment effects and CIs calculated by the addition of the bias-bound value to the original pooled effects.[78 79]

Moderator analysis

Moderator analysis will be undertaken to examine intervention components, methodological components and participant characteristics of studies associated with effectiveness, when number of studies permits. Specifically, the following moderators will be examined:

1. Dementia subtype;
2. Baseline severity of cognitive impairment;
3. Psychological model intervention based on;
4. Mode of delivery (eg, individual, dyadic or group);
5. Baseline severity of depression, anxiety, psychological distress or mental health-related quality of life;
6. Treatment setting;
7. Recruitment setting;
8. Type of control condition;
9. Length of follow-up.

If sufficient data are available, subgroup analysis, or meta-regression[67] will be conducted to examine moderators. With heterogeneity being anticipated, random effects will be adopted with Q and I^2 reported as measures of heterogeneity. It should be noted that moderator analysis only provides correlational, not casual, data.[80] Any significant findings should be examined through further primary research.[81]

DISCUSSION

Currently, there is no comprehensive review of psychological interventions for people with dementia or MCI that systematically examines:

1. Several outcomes relating to psychological well-being, such as depression, anxiety, mental health-related quality of life and psychological distress.
2. The quality of the available evidence.
3. Effectiveness of recruitment strategies used.
4. Effectiveness and clinical and methodological components associated with effectiveness.

This review will therefore examine the effectiveness of psychological interventions targeting psychological well-being for people experiencing dementia or MCI, identify clinical and methodological moderators of effect size alongside strategies associated with successful recruitment. With respect to these objectives, this review seeks to meet important objectives within phase I of the revised MRC guidance concerning the development of complex interventions.[82] It represents the first step towards developing a new psychological treatment for difficulties with psychological well-being in people with dementia, identifying important methodological uncertainties (eg, successful recruitment methods; appropriate comparator arms) to inform the design of a phase II feasibility study.

Author affiliations
[1]Clinical Education Development and Research (CEDAR) Group, Psychology: College of Life and Environmental Sciences, University of Exeter, Exeter, UK
[2]Mental Health Research Group, University of Exeter Medical School, University of Exeter, Exeter, UK
[3]NIHR PenCLAHRC, Health Statistics Group, University of Exeter Medical School, University of Exeter, Exeter, UK

Contributors PF and JW conceived and designed the study protocol and wrote the manuscript. JM provided statistical expertise and contributed to the review design and assisted in the drafting of the manuscript. MA and CD made contributions to the design, critical evaluation of intellectual content and assisted with drafting the manuscript. All authors have approved the final manuscript.

Funding This paper is supported by funding provided by Cornwall Partnership NHS Foundation Trust (CFT), South West Peninsula Academic Health Sciences Network (SWAHSN), and the University of Exeter. JM was supported by the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care South West Peninsula.

Disclaimer The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health.

Competing interests None declared.

Provenance and peer review Not commissioned; externally peer reviewed.

Open Access This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: http://creativecommons.org/licenses/by-nc/4.0/

REFERENCES

1. Christensen K, Doblhammer G, Rau R, *et al.* Ageing populations: the challenges ahead. *Lancet* 2009;374:1196–208.

BMJ Open: first published as 10.1136/bmjopen-2015-009713 on 27 January 2016. Downloaded from http://bmjopen.bmj.com/ on May 13, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

2. Lubitz J, Cai L, Kramarow E, *et al*. Health, life expectancy, and health care spending among the elderly. *New Engl J Med* 2003;349:1048–55.
3. Fratiglioni L, De Ronchi D, Agüero-Torres H. Worldwide prevalence and incidence of dementia. *Drugs Aging* 1999;15:365–75.
4. World Health Organisation. *Dementia a public health priority*. Geneva: WHO, 2012.
5. Ritchie CW, Terrera GM, Quinn TJ. Dementia trials and dementia tribulations: methodological and analytical challenges in dementia research. *Alzheimers Res Ther* 2015;7:31.
6. Samsi K, Manthorpe J. Care pathways for dementia: current perspectives. *Clin Interv Aging* 2014;9:2055–63.
7. Department of Health. *Living well with dementia: a National Dementia Strategy*. London: Department of Health, 2009.
8. Enache D, Winblad B, Aarsland D. Depression in dementia: epidemiology, mechanisms, and treatment. *Curr Opin Psychiatry* 2011;24:461–72.
9. Orgeta V, Qazi A, Spector AE, *et al*. Psychological treatments for depression and anxiety in dementia and mild cognitive impairment. *Cochrane Database Syst Rev* 2014;1:CD009125.
10. Modrego PJ. Depression in Alzheimer's disease. Patho-physiology, diagnosis, and treatment. *J Alzheimers Dis* 2010;21:1077–87.
11. Barca ML, Engedal K, Lacks J, *et al*. Factors associated with depression disorder in Alzheimer's disease are different from those found for other dementia disorders. *Dement Geriatr Cogn Dis Extra* 2012;2:19–28.
12. Novais F, Starkstein S. Phenomenology of depression in Alzheimer's disease. *J Alzheimers Dis* 2015;47:845–55.
13. Vilalta-Franch J, Garre-Olmo J, López-Pousa S, *et al*. Comparison of different clinical diagnostic criteria for depression in Alzheimer disease. *Am J Geriatr Psychiatry* 2006;14:589–97.
14. Teng E, Ringman JM, Ross LK, *et al*. Diagnosing depression in Alzheimer's disease with the national institute of mental health provisional criteria. *Am J Geriatr Psychiatry* 2008;16:469–77.
15. Starkstein SE, Dragovic M, Jorge R, *et al*. Diagnostic criteria for depression in Alzheimer disease: a study of symptom patterns using latent class analysis. *Am J Geriatr Psychiatry* 2011;19:551–8.
16. Olin JT, Schneider LS, Katz IR, *et al*. Provisional diagnostic criteria for depression of Alzheimer's disease. *Am J Psychiatry* 2002;10:125–8.
17. Polyakova M, Sonnabend N, Sander C, *et al*. Prevalence of minor depression in elderly persons with and without mild cognitive impairment: a systematic review. *J Affect Disord* 2014;152–154:28–38.
18. Solfrizzi V, D'Introno A, Colacicco AM, *et al*. Incident occurrence of depressive symptoms among patients with mild cognitive impairment —the Italian longitudinal study on aging. *Dement Geriatr Cogn Disord* 2007;24:55–64.
19. Ballard C, Neill D, O'Brien J, *et al*. Anxiety, depression and psychosis in vascular dementia: prevalence and associations. *J Affect Disord* 2000;59:97–106.
20. Ferreti L, McCurry SM, Logsdon R, *et al*. Anxiety and Alzheimer's disease. *J Geriatr Psychiatry Neurol* 2001;14:52–8.
21. Monastero R, Mangialasche F, Camarda C, *et al*. A systematic review of neuropsychiatric symptoms in mild cognitive impairment. *J Alzheimers Dis* 2009;18:11–30.
22. Kverno KS, Black BS, Nolan MT, *et al*. Research on treating neuropsychiatric symptoms of advanced dementia with non-pharmacological strategies, 1998–2008: a systematic literature review. *Int Psychogeriatr* 2009;21:825–43.
23. Hoe J, Hancock G, Livingston G, *et al*. Quality of life of people with dementia in residential care homes. *Br J Psychiatry* 2006;188:460–4.
24. Gaugler JE, Yu F, Krichbaum K, *et al*. Predictors of nursing home admission for persons with dementia. *Med Care* 2009;47:191–8.
25. Gibbons LE, Teri L, Logsdon R. Anxiety symptoms as predictors of nursing home placement in patients with Alzheimer's disease. *J Clin Geropsychology* 2002;8:335–42.
26. Kang HS, Myung W, Na DL, *et al*. Factors associated with caregiver burden in patients with Alzheimer's disease. *Psychiatry Investig* 2014;11:152–9.
27. Allegri RF, Sarasola D, Serrano CM, *et al*. Neuropsychiatric symptoms as a predictor of caregiver burden in Alzheimer's disease. *Neuropsychiatr Dis Treat* 2006;2:105–10.
28. Rapp MA, Schnaider-Beeri M, Wysocki M, *et al*. Cognitive decline in patients with dementia as a function of depression. *Am J Geriatr Psychiatry* 2011;19:357–63.
29. Seignourel PJ, Kunik ME, Snow L, *et al*. Anxiety in dementia: a critical review. *Clin Psychol Rev* 2008;28:1071–82.
30. Department of Health. *Prime minister's challenge on dementia: delivering major improvements in dementia care and research by 2015*. London: Department of Health, 2012.
31. Clare L, Nelis SM, Quinn C, *et al*. Improving the experience of dementia and enhancing active life—living well with dementia: study protocol for the IDEAL study. *Health Qual Life Outcomes* 2014;12:164.
32. Murray LM, Boyd S. Protecting personhood and achieving quality of life for older adults with dementia in the U.S. health care system. *J Aging Health* 2009;21:350–73.
33. Gates N, Valenzuela M, Sachdev PS, *et al*. Psychological well-being in individuals with mild cognitive impairment. *Clin Interv Aging* 2014;9:779–92.
34. Holm AL, Lyberg A, Severinsson E. Living with stigma: depressed elderly persons' experienced of physical health problems. *Nurs Res Pract* 2014;2014:527920.
35. Atkins J, Naismith SL, Luscombe GM, *et al*. Elderly care recipients'' perception of treatment helpfulness for depression and the relationship with help-seeking. *Clin Interv Aging* 2015;10:287–95.
36. Conner KO, Copeland VC, Grote NK, *et al*. Mental health treatment seeking among older adults with depression: the impact of stigma and race. *Am J Geriatr Psychiatry* 2010;18:531–43.
37. Ridner SH. Psychological distress: concept analysis. *J Adv Nurs* 2004;45:536–45.
38. Cooper C, Ketley D, Livingston G. Systematic review and meta-analysis to estimate potential recruitment to dementia intervention studies. *Int J Geriatr Psychiatry* 2014;29:515–25.
39. Hall CA, Reynolds-Iii CF. Late-life depression in the primary care setting: challenges, collaborative care, and prevention. *Maturitas* 2014;79:147–52.
40. Park M, Unützer J. Geriatric depression in primary care. *Psychiatr Clin North Am* 2011;34:469–87.
41. Webb AK, Jacobs-Lawson JM, Waddell EL. Older adults' perceptions of mentally ill older adults. *Aging Ment Health* 2009;13:838–46.
42. Drayer RA, Mulsant BH, Lenze EJ, *et al*. Somatic symptoms of depression in elderly patients with medical comorbidities. *Int J Geriatr Psychiatry* 2005;20:973–82.
43. Coventry PA, Hays R, Dickens C, *et al*. Talking about depression: a qualitative study of barriers to managing depression in people with long term conditions in primary care. *BMC Fam Pract* 2011;12:10.
44. Bartlam B, Crome P, Lally F, *et al*. The views of older people and carers on participation in clinical trials: the PREDICT Study. *Clin Investig* 2012;2:327–36.
45. Bryant C, Jackson H, Ames D. The prevalence of anxiety in older adults: methodological issues and a review of the literature. *J Affect Disord* 2008;109:233–50.
46. Centre for Reviews and Dissemination. *Systematic reviews: CRD's guidance for undertaking reviews in health care*. 3rd edn. New York: University of York, 2009.
47. Shamseer L, Moher D, Clarke M, *et al*. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *BMJ* 2015;349:g7647.
48. Higgins JPT, Altman DG, Sterne JAC. Chapter 8: assessing risk of bias in included studies. In: Higgins JP, Green S, eds. *Cochrane handbook for systematic reviews of interventions*. Version 5.1 (updated March 2011). The Cochrane Collaboration, 2011. Available from www.cochrane-handbook.org.
49. Cuijpers P, Berking M, Andersson G, *et al*. A meta-analysis of cognitive-behavioural therapy for adult depression, alone and in comparison with other treatments. *Can J Psychiatry* 2013;58:376–85.
50. Gellatly J, Bower P, Hennessy S, *et al*. What makes self-help interventions effective in the management of depressive symptoms? Meta-analysis and meta-regression. *Psychol Med* 2007;37:1217–28.
51. Farrand P, Woodford J. Impact of support on the effectiveness of written cognitive behavioural self-help: a systematic review and meta-analysis of randomised controlled trials. *Clin Psychol Rev* 2013;33:182–95.
52. Farrand P, Woodford J. Effectiveness of Cognitive Behavioural Self-Help for the Treatment of Depression and Anxiety in People with Long-Term Physical Health Conditions: a Systematic Review and Meta-Analysis of Randomised Controlled Trials. *Ann Behav Med* 2015;49:579–93.
53. Woodford J, Farrand P, Richards D, *et al*. Psychological treatments for common mental health problems experienced by informal carers of adults with chronic physical health conditions (Protocol). *Syst Rev* 2013;2:9.
54. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders: DSM-IV*. 4th edn. Washington DC: American Psychiatric Association, 1994.
55. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders: DSM-5*. 5th edn. Washington DC: American Psychiatric Association, 2013.

BMJ Open: first published as 10.1136/bmjopen-2015-009713 on 27 January 2016. Downloaded from http://bmjopen.bmj.com/ on May 13, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

56. World Health Organization. *The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines*. Geneva: World Health Organization, 1992.
57. Petersen RC, Smith GE, Waring SC, *et al*. Mild cognitive impairment: clinical characterization and outcome. *Arch Neurol* 1999;56:303–8.
58. Mohr DC, Ho J, Hart TL, *et al*. Control condition design and implementation features in controlled trials: a meta-analysis of trials evaluating psychotherapy for depression. *Transl Behav Med* 2014;4:407–23.
59. Beck AT, Steer RA, Brown GK. *Manual for the beck depression inventory-II*. San Antonio, TX: Psychological Corporation, 1996.
60. Beck AT, Epstein N, Brown G, *et al*. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol* 1988;56:893–7.
61. Goldberg DP, Hillier VF. A scaled version of the General Health Questionnaire. *Psychol Med* 1979;9:139–45.
62. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Med Care* 1992;30:473–83.
63. Black BS, Rabins PV, Kasper JD. *Alzheimer disease related quality of life user's manual*. Baltimore, MD: DEMeasure, 2000.
64. Ekers D, Webster L, Van Straten A, *et al*. Behavioural activation for depression; an update of meta-analysis of effectiveness and sub group analysis. *PLoS ONE* 2014;9:e100100.
65. Flückiger C, Del Re AC, Munder T, *et al*. Enduring effects of evidence-based psychotherapies in acute depression and anxiety disorders versus treatment as usual at follow-up—a longitudinal meta-analysis. *Clin Psychol Rev* 2014;34:367–75.
66. Laopaiboon M. Meta-analyses involving cluster randomization trials: a review of published literature in health care. *Stat. Methods Med* 2003;12:515–30.
67. Altman DG, Ashby D, Birks J, *et al*. Chapter 9: analysing data and undertaking meta-analyses. In: Higgins JP, Green S, eds. *Cochrane handbook for systematic reviews of interventions*. Version 5.1 (updated March 2011). The Cochrane Collaboration, 2011. Available from www.cochrane-handbook.org.
68. Altman DG, Ashby D, Bender R, *et al*. Chapter 16: special topics in statistics. In: Higgins JP, Green S, eds. *Cochrane handbook for systematic reviews of interventions*. Version 5.1 (updated March 2011). The Cochrane Collaboration, 2011. Available from www.cochrane-handbook.org.
69. Viechtbauer W. Conducting meta-analysis in R with the metafor package. *J Stat Software* 2010;36:1–48.
70. Hunter JE, Schmidt FL. Fixed effects vs. random effects meta-analysis models: implications for cumulative research knowledge. *Int J Select Assess* 2000;8:275–92.
71. Schmidt FL, Oh I, Hayes TL. Fixed- versus random-effects models in meta-analysis: model properties and an empirical comparison of differences in results. *Br J Math Stat Psychol* 2009; 62:97–128.
72. Higgins JP, Thompson SG. Quantifying heterogeneity in meta-analysis. *Stat Med* 2002;21:1539–58.
73. Higgins JP, Thompson SG, Deeks JJ, *et al*. Measuring inconsistency in meta-analyses. *BMJ* 2003;327:557–60.
74. Egger M, Davey Smith G, Schneider M, *et al*. Bias in meta-analysis detected by a simple, graphical test. *BMJ* 1997;315:629–34.
75. Sterne JAC, Gavaghan D, Egger M. Publication and related bias in meta-analysis: power of statistical tests and prevalence in the literature. *J Clin Epidemiol* 2000;53:1119–29.
76. Duval S, Tweedie R. Trim and fill: a simple funnel-plot–based method of testing and adjusting for publication bias in meta-analysis. *Biometrics* 2000;56:455–63.
77. Kirkham JJ, Dwan KM, Altman DG, *et al*. The impact of outcome reporting bias in randomised controlled trials on a cohort of systematic reviews. *BMJ* 2010;40:340:c365.
78. Copas J, Jackson D. A bound for publication bias based on the fraction of unpublished studies. *Biometrics* 2004;60:146–53.
79. Williamson PR, Gamble C. Application and investigation of a bound for outcome reporting bias. *Trials* 2007;8:9.
80. Viechtbauer W. Accounting for heterogeneity via random-effects models and moderator analyses in meta-analysis. *J Psychol* 2007;215:104–21.
81. Cooper HM. *Synthesizing research: a guide for literature reviews*. 3rd edn. Thousand Oaks, CA: Sage, 1998.
82. Craig P, Dieppe P, Macintyre S, *et al*. Development and evaluating complex interventions: the new Medical Research Council guidance. *BMJ* 2008;337:a1655.

BMJ Open: first published as 10.1136/bmjopen-2015-009713 on 27 January 2016. Downloaded from http://bmjopen.bmj.com/ on May 13, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

Ovid MEDLINE Search Strategy

1. exp dementia/
2. exp Cognition Disorders/
3. (dement* or Alzheimer* or lewy* or frontotemporal or FTD or FTLD or tvFTD or OBS or OBD or demented).ti,ab.
4. (lewy* adj2 bod*).ti,ab.
5. (organic brain syndrome).ti,ab.
6. (organic brain disease).ti,ab.
7. (organic brain disorder*).ti,ab.
8. mild cognitive impairment/
9. (ADRD OR AAMI OR AACD OR MCI OR A-MCI N-MCI OR M-MCI or aMCI OR MCIa OR CIND OR MCD OR MNC OR MNCD or NCD).ti,ab.
10. (ag* associated cogniti* decline).ti,ab.
11. (ag* associated memory impairment).ti,ab.
12. (mild cognitive impairment).ti,ab.
13. (neurocognitive disorder).ti,ab.
14. (preclinical AD).ti,ab.
15. (pre-clinical AD).ti,ab.
16. (preclinical alzheimer*).ti,ab.
17. (pre-clinical Alzheime*).ti,ab.
18. (prodromal Alzheime*).ti,ab.
19. (prodrom* adj2 dement*).ti,ab.
20. neurocognitive disorder*.ti,ab.
21. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20
22. (non pharmacologic*).ti,ab.
23. (non-pharmacologic*).ti,ab.
24. nonpharmacologic*.ti,ab.
25. exp Counseling/
26. exp Behavior Therapy/
27. exp Psychotherapy/
28. exp Bibliotherapy/
29. cognitive restructuring.ti,ab.
30. cognitive reframing.ti,ab.
31. behavio* activation.ti,ab.
32. activity scheduling.ti,ab.
33. problem solving.ti,ab.
34. (cCBT or iCBT or ehealth or e-health or teletherapy or telehealth).ti,ab.
35. (self adj help).ti,ab.
36. (self adj manag*).ti,ab.
37. (self adj administer*).ti,ab.
38. (psycho* adj therapy).ti,ab.
39. (cognitive adj2 therap*).ti,ab.
40. (behavio* adj2 therap*).ti,ab.
41. (CBT OR psychotherapy OR psychodynamic OR counseling OR counselling OR psychoeducation* OR psychosocial OR psycho-social).ti,ab.
42. (group adj therap*).ti,ab.
43. (group adj treatment*).ti,ab.

44. (group adj intervention*).ti,ab.
45. (group adj support).ti,ab.
46. (psycho education*).ti,ab.
47. 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46
48. exp Depression/
49. exp Anxiety/
50. exp Anxiety Disorders/
51. exp Mood Disorders/
52. ("quality of life").ti,ab.
53. (mental adj health).ti,ab.
54. (mental adj distress).ti,ab.
55. (psycholo* adj distress).ti,ab.
56. (neuropsycholog* or neropsychiatric).ti,ab.
57. (mood OR emotion* OR affective OR wellbeing OR well-being OR distress).ti,ab.
58. (negative adj affect).ti,ab.
59. Depress*.ti,ab.
60. Melancholi*.ti,ab.
61. Dysphori*.ti,ab.
62. (anxiety OR anxious OR stress OR worry).ti,ab.
63. Affective symptoms/
64. (well adj being).ti,ab.
65. 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64
66. exp Randomized Controlled Trial/
67. exp Clinical Trial/
68. meta-analysis/
69. Random Allocation/
70. (randomi?ed controlled trial*).ti,ab.
71. (RCT OR Trial OR review OR meta-analysis).ti,ab.
72. (random* adj allocat*).ti,ab.
73. 66 or 67 or 68 or 70 or 71 or 72
74. 21 and 47 and 65 and 73