Appendix A1. Example of search strategy used (Medline Ovid)

1. older adult*.ti,ab,kw.
2. oldest old.ti,ab,kw.
3. elder*.ti,ab,kw.
4. old age.ti,ab,kw.
5. ageing.ti,ab,kw.
6. geriatr*.ti,ab,kw.
7. later life.ti,ab,kw.
8. late life.ti,ab,kw.
9. oldest-old.ti,ab,kw.
10. aged, 80 and over/
11. geriatrics/nu, px, rh, th (nursing, psychology, rehabilitation, therapy)
12. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11
13. frail*.ti,ab,kw.
14. prefrail*.ti,ab,kw.
15. pre-frail*.ti,ab,kw.
16. ((impair* OR loss*) adj2 (physical* OR function*)).ti,ab,kw.
17. disab*.ti,ab,kw.
18. vulnerab*.ti,ab,kw.
19. (limit* adj2 (function* OR mobility OR capacity)).ti,ab,kw.
20. (function* adj2 (declin* OR capacity)).ti,ab,kw.
21. homebound.ti,ab,kw.
22. housebound.ti,ab,kw.
23. frail elderly/
24. exp activities of daily living/
25. mobility limitation/
26. fatigue/ or mental fatigue/
27. homebound persons/
28. Home Care Services/
29. 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28
30. depress*.ti,ab,kw.
31. anxi*.ti,ab,kw.
32. stress* adj1 (psychological OR emotional).ti,ab,kw.
33. mood adj1 (low OR disorder).ti,ab,kw.
34. (mental OR psychological OR emotional OR psychosocial) adj1 (health OR ill* OR wellbeing).ti,ab,kw.
35. bereave*.ti,ab,kw.
36. Exp depression/
37. affective symptoms/
38. stress, psychological/
39. depressive disorder/
40. mental health/
41. exp anxiety disorders/

42. 30 OR 31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41
43. randomized controlled trial.pt.
44. controlled clinical trial.pt.
45. randomized.ab.
46. clinical trials as topic.sh.
47. randomly.ab.
48. trial.ti.
49. 43 OR 44 OR 45 OR 46 OR 47 OR 48
50. exp animals/ not humans.sh.
51. 49 NOT 50
52. 12 AND 29 AND 42 AND 51

Note: the terms “drug therapy” and “placebo” were omitted from the Cochrane Medline RCT filter as these terms were not relevant to our interventions

Appendix A2. Table of included studies

Study	Participants (N, mean (SD) age, %female)	Depression/Anxiety criteria	Functional limitation criteria	Relevant outcomes measured + time-points	Key conclusions
Problem-solving therapy					
Alexopoulos 2016[27] RCT, USA Case management + PST vs case management	N = 171 (171 analysed) 74.9 (9.3) years, [gender NR]	Major depression (SCID, DSM IV) plus HAM-D-24 ≥19. Baseline mean (SD) HAM-D scores: Int 22.7 (3.98), control 22.46 (4.03)	Recipients of home-delivered meals services; ≥1 impaired IADL	Baseline, 3, 6, 9, 12, 24 weeks • Depression: depressive symptoms (HAM-D), response (≥50% reduction in HAM-D score), remission (HAM-D ≤10) • Need for social services (CANE) • Disability (WHODAS II)	No significant differences, though both groups reduced depressive symptoms (maintained 12 weeks post intervention)
Choi 2014[35] RCT, USA Tele-PST vs in-person PST vs support call	N = 158 (139 analysed) 64.80 (9.18) years, 78.5%f	HAM-D (24 item) ≥15. Baseline mean (SD) HAM-D scores: 23.89 (6.52).	Homebound (Medicare criteria), served by home-delivered meal program and four other aging-service agencies	Baseline, 12, 24, 36 weeks • Depressive symptoms (HAM-D) • Disability status (WHODAS II)	In-person and tele-PST were both more effective than a care call control, with longer sustaining of effects in tele-PST
Ciechanowski 2004[34] RCT, USA PEARLS PST vs usual care	N = 138 (138 analysed) 73.0 (8.5) years, 79%f	Minor depression or dysthymia (SCID, DSM IV). Baseline: 48.6% dysthymia, 51.4% had minor depression. Baseline mean (SD) HSCL-20 score 1.3 (0.5).	Receiving services from senior service agencies or living in senior public housing	Baseline, 6, 12 months • Depression: symptoms (HSCL-20), response (≥50% reduction in HSCL-20 score), remission (HSCL-20 score <0.5) • Health-related quality of life (FACT-G) • Healthcare Utilisation (eCornell Services Index, categorical)	PEARLS intervention resulted in lower severity and greater remission of depression at 6 and 12 months.
Gellis 2007[37] RCT, USA PST-home care vs usual care	N = 48 (40 analysed) 79.9 (4.2) years, 85%f	CES-D score ≥22 Baseline mean (SD) BDI score: Int 29.43 (6.5), control 30.3 (6.2), GDS score: Int: 15.25 (6.1), control 15.3 (6.4)	Home care patients	Baseline, posttreatment, 3 months, 6 months • Depressive symptoms (BDI, GDS-15) • Quality of Life Index (QOLI)	PST-HC decreased depressive symptoms and increased quality of life compared to UC
Gellis 2008[32] RCT, USA	N = 69 (62 analysed) 77.4 (2.3) years,	DSM IV criteria for minor depression plus HAM-D (17 item) score of ≥11. Baseline mean (SD) HAM-D	Home care patients	Baseline, posttreatment, 3, 6 months • Depressive symptoms (BDI, GDS-15) • Quality of Life Index (QOLI)	PST-HC decreased depressive symptoms compared to TAU. No change in quality of

Study	Participants (N, mean (SD) age, %female)	Depression/Anxiety criteria	Functional limitation criteria	Relevant outcomes measured + time-points	Key conclusions
PST-home care vs treatment as usual	87.5%f	scores: Int 20.31 (4.26), control 20.72 (4.53), GDS scores: Int 15.25 (6.1), control 15.3 (6.4)			life.
Kiosses 2010[25] RCT, USA PATH vs supportive therapy	N = 30 (30 analysed) PATH 80.46 (8.45) years, 66.67%f; ST 78.36 (8.12) years, 73.33%f	Major depression (SCID, DSM IV) plus HAM-D-24 score of ≥17. Baseline mean (SD) HAM-D scores: Int 22.40 (3.92), control 21.40 (2.80)	≥1 IADL impairment (Philadelphia MAI); limited mobility to follow therapy (physiotherapist judgement)	Baseline, 6, 12 weeks • Depressive symptoms (HAM-D) • Disability (SDS)	PATH was more effective than supportive therapy at reducing depression and disability.
Kiosses 2015[26] RCT, USA PATH vs supportive therapy	N = 74 (74 analysed) 80.90 (7.48) years, 74%f	Major depression (SCID, DSM IV) plus MADRS score of ≥17. Baseline mean (SD) MADRS scores: Int 21.08 (3.74), control 21.42 (3.26)	≥1 IADL impairment (Lawton IADL scale); limited mobility to attend weekly outpatient treatment (participant, caregiver, or physician report)	Baseline, 12 weeks • Depression: symptoms (MADRS), remission (MADRS ≤ 7), partial remission (MADRS ≤ 10), response (≥50% reduction in MARDS) • Disability (WHODAS II)	PATH is effective at reducing depression and disability in community-living older adults.
Collaborative care					
Banerjee 1996[29] RCT, UK Psychogeriatric MDT vs control	N = 69 (69 analysed) Int 80.4 (6.7) years, 85%f; control 81.0 (6.9) years, 81%f	≥8 on the Selfcare(d) questionnaire (plus AGECAT system to generate psychiatric diagnoses). Baseline mean (SD) MADRS score Int 27.5 (6.2), control 25.1 (6.3)	Receiving home care	Baseline, 6 months • Depression: recovery (change from AGECAT case to non-case); N improved, unchanged or increased AGECAT score; symptoms (MADRS)	Psychogeriatric treatment more effective than general practitioner care alone in treatment of depression.
Blanchard 1995[39] RCT (subgroup analysis of patients with incapacity), UK	N = 96 (82 analysed, N and characteristics of subgroup NR)	Short-CARE >=6 plus GMS - AGECAT used to classify depression diagnosis. Baseline mean (SD) DPDS score 8.84 (2.5)	"physical incapacity" - person's inability at the time of interview to move	Baseline, 3 months • Change in DPDS score on the short-CARE • N depression cases (GMS-AGECAT)	Collaborative care reduced depressive symptoms and number of cases compared to control. Those with

Study	Participants (N, mean (SD) age, %female)	Depression/Anxiety criteria	Functional limitation criteria	Relevant outcomes measured + time-points	Key conclusions
Collaborative care vs control	76.3 years [SD NR], 83%f		around their own home (interviewer-assessed)		physical capacity improved more than those without.
Bruce 2015[36,44] Cluster RCT, USA CAREPATH vs enhanced usual care	N = 306 (224 analysed at 3 months, 208 at 6 months, 174 at 12 months) 76.5 (8.0) years, 69.6%f	OASIS PHQ-2 ≥3. Baseline mean (SD) HAM-D-24 score 14.2 (7.8).	Receiving Medicare home healthcare services	Baseline, 3, 6, 12 months • Depression severity (HAM-D) • Healthcare utilization	CAREPATH only effective in subgroups with major depression. Non-significant reductions in 30- and 60-day hospitalisations.
Enguidanos 2005[30] RCT, USA Depression care management vs usual care management	N = 171 (151 analysed) 78 (7.1) years, 74%f	GDS score of ≥5. Baseline mean PHQ-9 scores Int 11.2, control 12.3 GDS: Int 8.39, control 7.49 [SDs not reported][1]	Inability to perform ≥1 ADL (Katz Index)	Baseline, 4, 12 months • Depressive symptoms (PHQ-9 and GDS) • Service use (physician visits, home health visits, primary care visits, emergency department visits, long-term care visits, hospital days)	Integrated Geriatric Case Management reduces depression and service use
Ell 2007[28] RCT, USA Stepped care vs enhanced usual care	N = 311 (201 analysed at 4 months, 176 at 8 months, 159 at 12 months) 78.1[2] years [SD NR], Int 75%f, control 70%f	PHQ-9 score of ≥8 plus positive cardinal symptom. Baseline PHQ-9 scores: 8-9: 8% Int, 4% control; 10-14: 36% Int, 38% control; ≥ 15: 56% Int, 57% control.	Receiving home care services	Baseline, 4, 8, 12 months • Depression: symptoms (PHQ-9), response (≥50% reduction in PHQ-9 score) • Health-related QOL (SF-20 physical and mental health summary scores) • Health services utilisation	Stepped care produced consistently better but not significantly different outcomes compared to control.

[1]The figures in this table reflect a larger cohort of participants (N = 171); data emailed to YB by author

[2]Note in published paper the mean (sd) baseline depression scores are reported as GDS for a smaller cohort (N = 153): 8.16 (2.7) (CC), 7.51 (2.9) (UC)

[2]This is the mean age of all the 9,178 home health-care patients who were screened, mean age of final 311 not reported

Study	Participants (N, mean (SD) age, %female)	Depression/Anxiety criteria	Functional limitation criteria	Relevant outcomes measured + time-points	Key conclusions
Llewellyn-Jones 1999[38,42] RCT[3], Australia Multifaceted shared care vs control	N = 220 (analysed 169) Int 84.9 (5.9) years, 83%f; control: 83.8 (5.7) years, 86%f	GDS-30 score ≥ 10. Baseline mean (SD) GDS scores Int 13.5 (3.2), control 13.5 (3.4)	Residing in hostels (assisted living) or self-care units (access to practical help) (care home residents excluded)	Baseline, 9.5 months • Depressive symptoms (GDS-30)	Modest but significant improvements in depression compared to control.
Nyunt 2010[33] RCT, Singapore CEPIS vs usual care	N = 274 (181 analysed) Int 73.5 (8.21) years, 58.8%f; control 73.5 (7.79) years, 52.7%f	GDS-15 score 5-11. Baseline mean (SD) HAM-D-17 scores: Int: 9.8 (5.16) control 9.5 (5.53); GDS-15: Int 8.5 (2.37) control 7.7 (2.58); BDI: Int 16.1 (7.46) control 17.3 (8.18).	Receiving social services, special needs services, residing in sheltered home facilities and nursing homes	Baseline, 3, 6, 12 months • Depression: symptoms (GDS-15, BDI, HAM-D-17), diagnosis category (SCID DSM-IV) • ADL (Mahoney & Barthel scale, self- and proxy-report), IADL (Lawton scale, self- and proxy-report) • QoL (SF-12) • Service use	Collaborative care improved depressive symptoms, response and remission rate and mental functioning compared to usual care. No impact on functional status or health service use.
Other					
Landreville 1997[40] RCT (subgroup analysis of people with disability), Canada Bibliotherapy vs delayed treatment	N = 23 (12 analysed) Int 71.80 (6.65) years, 90%f; control 72.15 (7.05) years, 75%f	GDS score ≥ 11. Baseline mean GDS scores 18.83, IDD 31.83, BDI 19.66 [SDs not reported]	≥1 ADL, IADL or mobility disability (FAMS[4])	Baseline, 4 weeks, 6 months • Depression: diagnosis (IDD), symptoms (IDD, GDS-30, BDI), clinically significant improvement (GDS-30 =<10, BDI ≤11) • Functional abilities (FAMS) (self- and significant other-reported)	Cognitive bibliotherapy reduces depressive symptoms but not disability in depressed older adults with a disability.
Serrano 2004[31] RCT, Spain	N = 50 (43 analysed) Int 75.8 (8.1)	≥ 16 on GDS. Baseline mean (SD) CES-D-20 scores Int 30.7 (6.76), control 27.61 (6.29)	Receiving social services for ≥1 hr per day, 5 days a week	Baseline, 8 weeks • Depression (CES-D, Spanish) • Life satisfaction (Life Satisfaction	Reduced depressive symptoms and increased life satisfaction compared

[3]Unusual design: participants randomised prior to eligibility assessment, control and intervention implemented serially for the entire residential care facility population.

[4] Likely this measurement tool used as used throughout study but not clear which tool used for inclusion criteria

Study	Participants (N, mean (SD) age, %female)	Depression/Anxiety criteria	Functional limitation criteria	Relevant outcomes measured + time-points	Key conclusions
Life review vs control	years, 82.6%f; control 78.4 (7.3) years, 70%f			Index A, Spanish)	to control.

[i] BDI = Beck Depression Inventory, CANE = Camberwell Assessment of Need for the Elderly, CES-D = Centre for Epidemiological Studies of Depression Scale, DPDS = Depression Diagnostic Scale (part of SHORT-CARE), DSM IV = Diagnostic & Statistical Manual of Mental Disorders IV, FACT-G = Functional Assessment of Cancer Therapy Scale-General, FAMS = Functional Autonomy Measurement System, GDS = Geriatric Depression Scale, HAM-D = Hamilton Depression Scale, HC = home care, HSCL-20 = Hopkins Symptom Checklist Depression Scale, IADL = Instrumental Activities of Daily Living, IDD = Inventory to Diagnose Depression, Int = intervention, MADRS = Montgomery-Asberg Depression Rating Scale, MAI = Multilevel Assessment Instrument, OASIS = Outcomes and Assessment Information Set, PATH = Problem Adaptation Therapy, PEARLS = Program to Encourage Active, Rewarding Lives for Seniors, PHQ = Patient Health Questionnaire, PST = Problem Solving Therapy, QOL = quality of life, RCT = randomised controlled trial, SCID = Structured Clinical Interview for DSM Disorders, SD =Standard Deviation, SDS = Sheehan Disability Scale, SHORT-CARE = Short Comprehensive Assessment and Referral Evaluation, WHODAS = World Health Organisation Disability Assessment Schedule,

Appendix A3: Ongoing studies

Title, lead author and location	Status	Depression/Anxiety criteria	Functional limitation criteria	Intervention	Identifier or location
Randomized Controlled Trial of Problem Solving Therapy to Prevent Depression among Older Adults with Need for Supportive Services S Albert, USA	Completed, not published	Mild depressive symptoms: 9-item Patient Health Questionnaire 1–9, with cardinal symptom of anhedonia or dysphoria.	Self-reporting disability consistent with need for aging services, which was later confirmed by reports of service use (Cornell Services Index-Primary Care) or physical disability (RAND-12 Physical Health Composite, Short Physical Performance Battery) in baseline assessments.	Problem-solving therapy (PST) vs enhanced usual care	Albert et al. *Am J Geriatr Psychiatry*. 2016 24(1): 94–102.
Home-delivered Intervention for Depressed, Cognitively Impaired Elders D Kiosses, USA	Recruiting	Diagnosis: Major depression, unipolar as determined by Structured Clinical Interview for DSM IV criteria. Severity of depression: Montgomery-Ashworth Depression Rating Scale ≥18.	Disability, i.e. impairment in at least 1 Instrumental Activity of Daily Living as measured by Philadelphia Multilevel Assessment Instrument - Instrumental Activities of Daily Living subscale	PATH (Problem Adaptation Therapy, a form of PST) vs Supportive Therapy	NCT01350349 Clinicaltrials.gov
Building Community Capacity for Disability Prevention for Minority Elders (Positive Minds - Strong Bodies) M Alegria, USA	Recruiting	Score above threshold on Patient Health Questionnaire-9, Generalised Anxiety Disorder Assessment, or Geriatric Depression Scale	"Disability" condition; not yet clear from trials register entry	Combined cognitive behavioural therapy + exercise intervention vs enhanced usual care	NCT02317432 Clinicaltrials.gov
Telehealth Depression Treatments for Older Adults N Choi, USA	Recruiting	Hamilton Depression rating Scale >14	Homebound	IT-PST (tele-delivered) vs IT-Self Care Management vs usual care	NCT02600754 Clinicaltrials.gov
Music therapy to relieve pain and depressive symptoms for community-dwelling frail older adults M Yee Tse, Hong Kong	Not yet recruiting	Score >3 in the 15-item Geriatric Depression Scale	Score ≥1 in the frailty index	Music therapy group vs control (details not reported)	ACTRN12614000168651 WHO ICTRP