Health Care Team Interventions for Older Adults With Distress Behaviors

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U.S. Department of Veterans Affairs
Veterans Health Administration
Health Services Research & Development Service

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Appendix

SEARCH STRATEGIES

Librarian searcher: Sarah Cantrell, MLIS; Duke University Medical Center Library & Archives, Duke University School of Medicine

Peer review of search conducted by: Samantha Kaplan, PhD, MLS; Duke University Medical Center Library & Archives, Duke University School of Medicine

Database: MEDLINE (via Ovid)
Search date: 12/14/2022
note: Ovid MEDLINE(R) ALL 1946 to December 13, 2022

	Search Set	Search Statement	Results
1	*setting – residential*	residential facilities/ or exp assisted living facilities/ or exp long-term care/ or exp homes for the aged/ or exp nursing homes/ or exp skilled nursing facilities/ or exp intermediate care facilities/ or ("nursing home" or "nursing homes" or "assisted living" or "homes for the aged" or "home for the aged" or "homes for the elderly" or "home for the elderly" or snf or "skilled nursing facility" or "skilled nursing facilities").ti,ab. or (residential adj3 (care or healthcare or treat* or therap*)).ti,ab. or ((residential or rehab*) adj3 facilit*).ti,ab. or ((home or homes or facility or facilities or house or houses or housing) adj3 (aged or elderly or geriatric or "old adult" or "old adults" or "older adult" or "older adults" or "old person" or "older person" or "old people" or "older people" or senior or seniors)).ti,ab. or ((longterm or "long term" or extended) adj3 (care or healthcare or facilit*)).ti,ab.	128,335
2	*setting – transition of care*	continuity of patient care/ or exp "hospital to home transition"/ or exp patient transfer/ or exp transitional care/ or (continuity adj3 (care or healthcare)).ti,ab. or ((transition or transitions or transitioned or transitioning or transitional) adj3 (care or healthcare or home or homes or house or houses or housing)).ti,ab. or (("patient transfer" or "patient transfers") adj3 (residence or residences or residential or home or house or homes or houses)).ti,ab. or (hospital* adj3 (residence or residences or residential or home or house or homes or houses) adj3 (transition or transitions or transitioned or transitioning or transitional)).ti,ab. or ((home or home-based) adj3 ("primary care" or "primary healthcare")).ti,ab.	45,337
3	*Inpatients w/ mental illness*	((inpatient* or in-patient* or (hospital* adj2 patient*)) adj4 ("mental health" or "mental illness" or "mental illnesses" or "mentally ill" or psychiatric or neuropsychiatric)).ti,ab.	17,802
4	*Older adults*	exp middle aged/ or exp aged/ or exp "health services for the aged"/ or (aged or aging or "older adult" or "older adults" or "old person" or "older person" or "old people" or "older people" or "old folk" or "old folks" or "older folk" or "older folks" or elder or elders or elderly or senior or seniors or geriatric or geriatrics or retired or retiree or retirees).ti,ab.	6,122,348
5	*older adult inpatients w/ mental illness*	3 and 4	7,527
6	*Combining settings*	1 or 2 or 5	177,096
7	*Disruptive behavior*	exp psychological distress/ or exp psychomotor agitation/ or exp problem behavior/ or violence/ or exp impulsive behavior/ or anger/ or	188,857

		exp hostility/ or exp wandering behavior/ or ((disrupt* or neuropsych* or problem or problematic or challenging or danger* or violen* or aggress* or distress* or uncooperative or "not cooperative" or anger or angry or hostil* or impulsive*) adj6 (behav* or demeanor or conduct or action or actions or symptom or symptoms)).ti,ab. or ((abus* or nonsens* or inappropriate* or expressive) adj2 (language or speech)).ti,ab.	
8	*concept combination*	6 and 7	4218
9	*date limit 2000 - present*	limit 8 to da=20000101-20231231	3530
10	*study design exclusion*	9 not (case reports or editorial or letter or comment or congress).pt.	3,363

Database: Embase (via Elsevier)
search date: 12/14/2022
note: Search from the Results page

	Search Set	Search Statement	Results
1	*setting – residential*	'assisted living facility'/exp OR 'long term care'/de OR 'home for the aged'/exp OR 'nursing home'/exp OR ('nursing home' OR 'nursing homes' OR 'assisted living' OR 'homes for the aged' OR 'home for the aged' OR 'homes for the elderly' OR 'home for the elderly' OR snf OR 'skilled nursing facility' OR 'skilled nursing facilities'):ti,ab OR (residential NEAR/3 (care OR healthcare OR treat* OR therap*)):ti,ab OR ((residential OR rehab*) NEAR/3 facilit*):ti,ab OR ((home OR homes OR facility OR facilities OR house OR houses OR housing) NEAR/3 (aged OR elderly OR geriatric OR 'old adult' OR 'old adults' OR 'older adult' OR 'older adults' OR 'old person' OR 'older person' OR 'old people' OR 'older people' OR senior OR seniors)):ti,ab OR ((longterm OR 'long term' OR extended) NEAR/3 (care OR healthcare OR facilit*)):ti,ab	271,864
2	*setting – transition of care*	'hospital to home transition'/exp OR 'transitional care'/exp OR (continuity NEAR/3 (care OR healthcare)):ti,ab OR ((transition OR transitions OR transitioned OR transitioning OR transitional) NEAR/3 (care OR healthcare OR home OR homes OR house OR houses OR housing)):ti,ab OR (('patient transfer' OR 'patient transfers') NEAR/3 (residence OR residences OR residential OR home OR house OR homes OR houses)):ti,ab OR (hospital* NEAR/3 (residence OR residences OR residential OR home OR house OR homes OR houses) NEAR/3 (transition OR transitions OR transitioned OR transitioning OR transitional)):ti,ab OR ((home OR home?based) NEAR/3 ('primary care' OR 'primary healthcare')):ti,ab	33,684
3	*inpatients w/ mental illness*	((inpatient* OR in?patient*) NEAR/4 ('mental health' OR 'mental illness' OR 'mental illnesses' OR 'mentally ill' OR psychiatric OR neuropsychiatric)):ti,ab OR (hospital* patient* NEAR/4 ('mental health' OR 'mental illness' OR 'mental illnesses' OR 'mentally ill' OR psychiatric OR neuropsychiatric)):ti,ab OR (hospital* NEAR/2 patient*))	33,489
4	*older adults*	'middle aged'/exp OR 'aged'/exp OR 'elderly care'/de OR 'geriatric care'/exp OR (aged OR aging OR 'older adult' OR 'older adults' OR 'old person' OR 'older person' OR 'old people' OR 'older people' OR 'old folk' OR 'old folks' OR 'older folk' OR 'older folks' OR elder OR elders	5,804,962

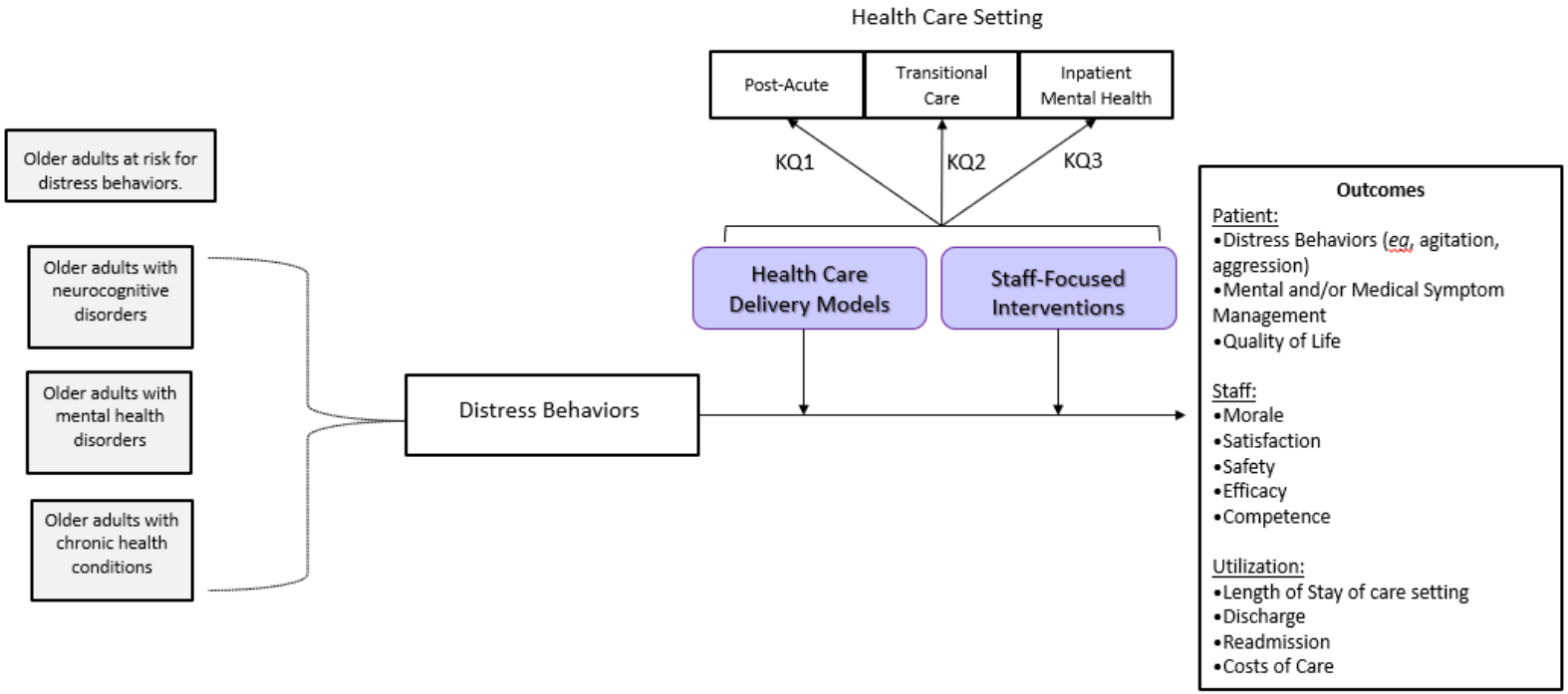
		OR elderly OR senior OR seniors OR geriatric OR geriatrics OR retired OR retiree OR retirees):ti,ab	
5	*older adult inpatients w/ mental illness*	#3 AND #4	9,072
6	*combining settings*	#1 OR #2 OR #5	310,907
7	*disruptive behavior*	'distress syndrome'/exp OR 'agitation'/exp OR 'disruptive behavior'/exp OR 'impulsiveness'/exp OR 'anger'/exp OR 'hostility'/exp OR 'wandering behavior'/exp OR ((disrupt* OR neuropsych* OR problem OR problematic OR challenging OR danger* OR violen* OR aggress* OR distress* OR uncooperative OR 'not cooperative' OR anger OR angry OR hostil* OR impulsive*) NEAR/6 (behav* OR demeanor OR conduct OR action OR actions OR symptom OR symptoms)):ti,ab OR ((abus* OR nonsens* OR inappropriate* OR expressive) NEAR/2 (language OR speech)):ti,ab	288,415
8	concept combination	#6 AND #7	7616
9	*date limit 2000 - present*	#8 AND [01-01-2000]/sd	6969
10	*study design exclusion*	#9 NOT ('case report'/exp OR 'case study'/exp OR 'editorial'/exp OR [editorial]/lim OR 'letter'/exp OR [letter]/lim OR 'note'/exp OR [note]/lim OR [conference abstract]/lim OR 'conference abstract'/exp OR 'conference abstract'/it)	4,433

Database: APA PsycINFO (via Ovid)
search date: 12/14/2022
note: APA PsycINFO 1806 to December Week 1 2022

	Search Set	Search Statement	Results
1	*setting – residential*	"Residential Care Institutions"/ or exp nursing homes/ or exp "nursing home residents"/ or assisted living/ or "long term care"/ or ("nursing home" or "nursing homes" or "assisted living" or "homes for the aged" or "home for the aged" or "homes for the elderly" or "home for the elderly" or snf or "skilled nursing facility" or "skilled nursing facilities").ti,ab. or (residential adj3 (care or healthcare or treat* or therap*)).ti,ab. or ((residential or rehab*) adj3 facilit*).ti,ab. or ((home or homes or facility or facilities or house or houses or housing) adj3 (aged or elderly or geriatric or "old adult" or "old adults" or "older adult" or "older adults" or "old person" or "older person" or "old people" or "older people" or senior or seniors)).ti,ab. or ((longterm or "long term" or extended) adj3 (care or healthcare or facilit*)).ti,ab.	45,947
2	*setting – transition of care*	"Continuum of Care"/ or "client transfer"/ OR (continuity adj3 (care or healthcare)).ti,ab. or ((transition or transitions or transitioned or transitioning or transitional) adj3 (care or healthcare or home or homes or house or houses or housing)).ti,ab. or (("patient transfer" or "patient transfers") adj3 (residence or residences or residential or home or house or homes or houses)).ti,ab. or (hospital* adj3 (residence or residences or residential or home or house or homes or houses) adj3 (transition or transitions or transitioned or transitioning or transitional)).ti,ab. or ((home or home-based) adj3 ("primary care" or "primary healthcare")).ti,ab.	8,151

3	*inpatients w/ mental illness*	((inpatient* or in-patient* or (hospital* adj2 patient*)) adj4 ("mental health" or "mental illness" or "mental illnesses" or "mentally ill" or psychiatric or neuropsychiatric)).ti,ab.	18,093
4	*older adults*	"older adulthood"/ or "geriatric patients"/ or "middle adulthood"/ OR (aged or aging or "older adult" or "older adults" or "old person" or "older person" or "old people" or "older people" or "old folk" or "old folks" or "older folk" or "older folks" or elder or elders or elderly or senior or seniors or geriatric or geriatrics or retired or retiree or retirees).ti,ab.	451,157
5	*older adult inpatients w/ mental illness*	3 and 4	2,473
6	*combining settings*	1 or 2 or 5	55,550
7	*disruptive behavior*	"Distress"/ OR "Agitation"/ OR "Violence"/ OR "Patient Violence"/ OR "Impulsiveness"/ OR "Anger"/ OR "Anger Expression"/ OR "Hostility"/ OR "Wandering Behavior"/ OR ((disrupt* or neuropsych* or problem or problematic or challenging or danger* or violen* or aggress* or distress* or uncooperative or "not cooperative" or anger or angry or hostil* or impulsive*) adj6 (behav* or demeanor or demanour or conduct or action or actions or symptom or symptoms)).ti,ab. or ((abus* or nonsens* or inappropriate* or expressive) adj2 (language or speech)).ti,ab.	191,082
8	concept combination	6 and 7	3509
9	*date limit 2000 - present*	limit 8 to yr="2000 -Current"	2688
10	*limit*	limit 9 to "0110 peer-reviewed journal"	2274
11	*limit*	limit 10 to (journal article or reviews)	2111

ANALYTIC FRAMEWORK



STUDY CHARACTERISTICS

Refer to the main report's reference list for full citations.

STUDY CHARACTERISTICS FOR STUDIES RATED AS LOW OR SOME CONCERNS FOR RISK OF BIAS

Study	Sample Size *Follow-Up*	Population	Intervention Categories	Comparator	Outcomes Assessed	Risk of Bias Rating Conflicts of Interest Study Funding Source
KQ1						
Appelhof, 2019[39] Linked study: van Duinen-van den, 2018[99] van Duinen-van den Ijssel[100]	N=274 *6 months, 12 months, 18 months*	Residents with a dementia diagnosis with a symptom onset before the age of 65 who resided on the Young-Onset Dementia Special Care Unit	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None Funding from Netherlands Organization for Health Research and Development, the Archipel Care Group in the Netherlands, the Florence Care Group in the Netherlands, the Dutch YOD Knowledge Center, and the Dutch Alzheimer Society
Ballard, 2016[81]	N=277 *9 months*	Residents with dementia who had a Clinical Dementia Rating and the Functional Assessment Staging	Health care team + patient	Care as usual	Patient outcomes	Low Conflicts of interest: first author reports grants and personal fees from Acadia, Lundbeck, personal fees from Napp, Roche, Orion, Bial, Bristol-Myers Squibb, Otsuka, and Novartis. Funded by the National Institute for Health Research Grants for

Study	Sample Size *Follow-Up*	Population	Intervention Categories	Comparator	Outcomes Assessed	Risk of Bias Rating Conflicts of Interest Study Funding Source
						Applied Research Programme
Ballard, 2018 [40] Linked studies: Romeo, 2019[101]	N=847 *9 months*	Residents in a nursing home were eligible for the study if they met criteria for dementia (defined as a score 1 or greater on the Clinical Dementia Rating – CDR) Eligible nursing homes had at least 60% of residents with dementia	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: first author reports grants and personal fees from Acadia, Lundbeck, personal fees from Napp, Roche, Orion, Bial Bristol Myer Squibb, Otusaka, Novartis and Sunovion, outside the submitted work Funded by the National Institute of Health Research, Programme Grant for Applied Research
Chapman, 2007[53]	N=118 *8 weeks*	Residents having either Alzheimer's or advanced dementia and needing assistance on 4 or more Activities of Daily Living (ADLs), scoring 23 or less on the Mini-Mental state examination (MMSE), and 4 or more on the Global Deterioration Scale (GDS)	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: NR Conflicts of interest: Grant from the Dementia Grants Program, New York State Department of Health
Chenoweth, 2009[52]	N=289 *4 months and 8 months*	Residents with a diagnosis of dementia, with low cognitive function and "persistent need driven behaviors that made it difficult for staff to provide quality care"	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None Australian Health Ministers' Advisory Council
Chenoweth, 2014[46]	N=601 *8 months*	Permanent residents with a dementia diagnosis that had been admitted at least 3 months prior to baseline and assessed "high care needs" and presence of agitation	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None

Study	Sample Size *Follow-Up*	Population	Intervention Categories	Comparator	Outcomes Assessed	Risk of Bias Rating Conflicts of Interest Study Funding Source
						Unknown
Cohen-Mansfield, 2007[54]	N=167 *10 days*	Inpatient nursing home residents with diagnosed dementia	Patient only	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None National Institutes of Health
Cohen-Mansfield, 2012[50]	N=125 *2 weeks*	Nursing home residents who had been in the nursing home at least 3 weeks, were at least 60 years old, and have been identified by nursing staff as agitated at least several times per day	Patient only	Care as usual	Patient outcomes	Some concerns Conflicts of interest: NR National Institutes of Health
Deudon, 2009[51]	N=1369 *8 weeks and 20 weeks*	Facilities with 'sufficient" patients with a diagnosis of dementia according to the (International Classification of Diseases) ICD 10 criteria, an MMSE score <=24 and presenting at least 1 of the following behavioral and psychological symptoms of dementia (BPSD) at least once a week: opposition, denial of care, aberrant motor behavior, agitation, delusions, hallucinations or screaming	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None Grant from the French Ministry of Health and the Fondation Mederic Alzheimer
Eritz, 2016[59]	N=73 *19 days and 46 days*	Residents over age 65 residing in one of 6 long-term care (LTC) facilities in a mid-sized metro area, who were identified by senior nursing staff as having symptoms consistent with a dementia diagnosis	Patient only	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None No
Fossey, 2006[55]	N=346 *12 months*	12 eligible nursing homes within a minimum of 25% of patients with dementia and were taking neuroleptics and the patients in them (of which the numbers varied)	Health care team, Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: last author has spoken at educational events sponsored by Janssen and is a paid consultant for Bristol-Myers Squibb

Study	Sample Size *Follow-Up*	Population	Intervention Categories	Comparator	Outcomes Assessed	Risk of Bias Rating Conflicts of Interest Study Funding Source
						Grant from the Alzheimer's Society, funded by the Community Fund
Fukuda, 2018[41]	N=400 *1 month*	Care staff (care workers, nurses, OTs, clinical psychologists) working in Japanese long term care facilities, who worked at least 4 days a week, who had length of service longer than 1 year	Health care team only	Care as usual	Staff outcomes	Some concerns Conflicts of interest: None Funded by the Research Funding for Longevity Sciences from the National Center for Geriatrics & Gerontology
Galik, 2015[44]	N=96 *3 months and 6 months*	Residents of the AL who were at least 55 years of age, had a Mini-Mental State Exam (MMSE) score of 15 or less, and an anticipated stay > 6 months	Health care team + patient + environment	Care as usual	Patient outcomes	Some concerns Conflicts of interest: NR National Institute on Aging grant
Galik, 2021[35]	N=336 *4 months and 12 months*	Residents of the nursing home who were at least 55, spoke English, and scored <= 15 on the Mini-Mental State Examination (MMSE)	Health care team + patient + environment	Care as usual	Patient outcomes	Some concerns Conflicts of interest: NR Robert Wood Johnson Foundation Nurse Faculty Scholar Grant
Kirkham, 2020[37]	N=10 LTC homes - estimated total 150 residents per home *Every 3 months for 12 months*	Long-term care (LTC) homes with higher potential need, determined by the prevalence of potentially inappropriate antipsychotic use in the year preceding recruitment	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: Last author - site investigator for clinical research trials sponsored by Roche Canadian Frailty Network Interdisciplinary Fellowship Award and by the Canadian Consortium on Neurodegeneration in Aging

Study	Sample Size *Follow-Up*	Population	Intervention Categories	Comparator	Outcomes Assessed	Risk of Bias Rating Conflicts of Interest Study Funding Source
Klapwijk, 2018[102] Linked study Pieper 2016[83]	N=288 *3 months and 6 months*	Residents with Reisberg Global Deterioration Scale Score 5 (moderate dementia), 6 (moderately severe dementia), or 7 (severe dementia). Having a behavioral problem or an indication of being in pain and screened for the absence of a psychiatric diagnosis	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None Innovatiefonds Zorgverzekeraars, the Netherlands
Kovach, 2006[58]	N=114 *2 weeks and 4 weeks*	Mini-Mental State Examination (MMSE) score indicating moderate to severe cognitive impairment, advanced functional impairment (*ie*, functional assessment staging [FAST], no chronic psychiatric diagnosis other than dementia-associated diagnosis and at least 4 weeks post admission to skilled nursing care at this nursing home.	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: NR National Institute of Nursing Research
Leone, 2012[61]	N=230 *4 weeks and 17 weeks*	Residents had to have a diagnosis of AD or related pathology, an MMSE score below 24, and present all the diagnostic criteria for apathy	Health care team only	Care as usual	Patient outcomes	Some concerns Conflicts of interest: NR Funding from the Federation of scientific cooperation
Litchwarck, 2018[42]	N=229 *8 weeks and 12 weeks*	Probable dementia, defined as a Clinical Dementia Rating (CDR)15 score of 1 or higher, a moderate to high degree of agitation, defined as a score of at least 6 on the single agitation/aggression item of the Neuropsychiatric Inventory Nursing Home version (NPI-NH)16, and being a long-term patient, residing in the nursing home for at least 2 weeks before inclusion	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None Funded in total by a grant from the Innlandet Hospital Trust
Livingston, 2019[38]	N=404 *8 months*	Eligible care homes with at least 17 residents with dementia, agreed to the mandatory training for all eligible staff and the intervention implementation plans, and more that 60% of staff agreeing to participate. Staff were eligible if they worked during the day providing in-person care to residents with dementia.	Health care team only	Care as usual	Patient outcomes	Low Conflicts of interest: first author has received consultancy fees from Otsuka Pharmaceutical

Study	Sample Size *Follow-Up*	Population	Intervention Categories	Comparator	Outcomes Assessed	Risk of Bias Rating Conflicts of Interest Study Funding Source
						The UK Economic and Social Research Council and the National Institute of Health Research
Moniz-Cook, 2017[62]	N=832 residents 609 staff *4 to 11 months*	Resident lived in recruited care home, met the diagnostic criteria for dementia, and exhibited at least 4 problems on the challenging behavior stratum.	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None National Institute for Health Research under its Programme Grants for Applied Research
Mork Rokstad, 2013[60] Linked study: Rosvik, 2013[103]	N=624 *10 months*	Resident of a participating nursing home with dementia (all stages)	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: Pharmaceutical company consultation Research Council of Norway
Rapp, 2013[49]	N=304 *10 months*	Nursing homes in good standing with local nursing home authorities (thus ensuring comparable nursing staff-to-resident ratios and provision of social workers, physical therapists, and occupational therapists on site), overall nursing home size between 100 and 200 residents, and a ratio of 50% to 70% of residents suffering from dementia	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None German Federal Ministry for Health .
Resnick, 2021[36]	N=550 *4 months and 12 months*	(1) aged 65 years or older; (2) able to speak English; (3) living in a participating assisted living setting at the time of recruitment; and (4) able to recall at least 1 of 3 words as per the Mini-Cog	Health care team + patient + environment	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None National Institute of Aging
Stensvik, 2022[34]	N=309 *3 months*	Residents must be set up for "long-term stay," have been a resident at least 60 days, life expectancy of at least 6 months	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None The study was funded by University College/NTNU

Study	Sample Size *Follow-Up*	Population	Intervention Categories	Comparator	Outcomes Assessed	Risk of Bias Rating Conflicts of Interest Study Funding Source
						Department of Public Health and Nursing, and The Norwegian Nurses Organisation
Teri, 2005[56]	N=254 *8 weeks*	Resident: diagnosed with Alzheimer's disease or related dementia, had problems with depression, anxiety, or agitation rated by staff as at least moderately distressing to the resident or requiring help, and, had a family member with power of attorney capable of providing consent Staff: direct care day staff who work at least one full shift, 2 days per week	Health care team only	Care as usual	Patient outcomes Staff outcomes	Some concerns Conflicts of interest: None This study was supported in part by a Pioneer Award from the Alzheimer's Association
Testad, 2016[43]	N=274 *7 months*	NR	Health care team only	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None Norwegian Research Council
Van de Ven 2013[48] Linked studies: Van de Ven 2014[104] Van de Ven 2012[105]	N=816	Both residents and staff of care homes were included in the population. For inclusion, residents were required to have a dementia diagnosis by an elderly-care physician, approval of the elderly-care physician for inclusion, be at least 65 years old, have at least one NPS, and have the ability to use the common areas such as the shared living room, for at least 4 hours per day.	Health care team + patient	Care as usual	Patient outcomes Staff outcomes	Some concerns Conflicts of interest: NR Netherlands Organization for Health Research and Development. The first and second authors were financially supported by the funding bodies.
Zwijsen, 2014[45]	N=395 *Every 4 months for 20 months*	All of the residents of the DSCU were included in (analysis of) the care program, including residents without challenging behavior	Health care team + patient	Care as usual	Patient outcomes	Some concerns Conflicts of interest: None Netherlands Organization for Health Research and Development

Study	Sample Size *Follow-Up*	Population	Intervention Categories	Comparator	Outcomes Assessed	Risk of Bias Rating Conflicts of Interest Study Funding Source
KQ2						
El Haddad, 2018[76]	N=116 *1 week, 4 weeks, 12 weeks*	Nursing home residents who lived in a nursing home for at least 30 days	N/A	Care as usual	Patient outcomes	Moderate Conflicts of interest: None Not Reported
KQ3						
Bowers, 2015[78]	N=564 NR	Nursing staff at 31 psychiatric wards across 15 hospitals in the national health service	N/A	Care as usual	Staff outcomes	Some concerns Conflicts of interest: None National Institute of Health Research grant

STUDY CHARACTERISTICS FOR STUDIES RATED AS HIGH RISK OF BIAS

Study	Sample Size *Follow-Up*	Population	Intervention Characteristics	Comparator	Outcomes Assessed	Risk of Bias Rating
KQ1 High/Serious ROB						
Bakker, 2011[70]	N=168 *13 weeks and 6 months*	Participants met DSM-IV classification of dementia, amnestic disorder or other cognitive disorder and were at least 65 years old, and experiencing at least 3 neuropsychiatric symptoms (on NPI), with a mini-mental stat exam score between 18-27 and Barthel Index between 5-19	Multidisciplinary coordination In-person	Care as usual	Patient outcomes	High Conflicts of interest: Not reported Netherlands Organisation for Health Research and Development
Davison, 2007[72]	N=203 (90 staff; 113 residents) *6 months*	Nurses and nursing assistants who volunteered to participate in the study; residents with dementia and challenging behaviors who were selected by senior staff	Skills/knowledge of staff In-person	Care as usual	Provider outcomes	High Conflicts of interest: Not reported Not reported

Study	Sample Size *Follow-Up*	Population	Intervention Characteristics	Comparator	Outcomes Assessed	Risk of Bias Rating
Denormandie, 2014[66]	N=459 *between 6 and 7 months after the last of the 3 training sessions*	65+ years of age		Care as usual	Patient outcomes	N/A Conflicts of interest: Not reported Not reported
Gates, 2005[74]	N=138 *1 week and 6 months*	Full-time nursing assistants who provided full-time care provided to residents, and did not work for an outside employment agency	Skills/Knowledge of staff In-person	Care as usual	Staff outcomes	High Conflicts of interest: Not reported National Institute for Nursing Research and the National Institute for Occupational Safety and Health
Irvine, 2012a[68]	N=103 *8 weeks and 16 weeks*	NR	Skills/knowledge of staff In-Person	Care as usual	Staff outcomes	High Conflicts of interest: None National Institute on Aging
Irvine, 2012b[67]	N=159 *1 month*	Nurse aides who worked in the six long-term care facilities participating in the study.	Skills/Knowledge of staff Internet-based	Care as usual	Staff outcomes	High Conflicts of interest: Not reported Grant from the National Institute on Aging to Oregon Center for Applied Science
McCabe, 2015[65]	N=391 *3 months and 6 months*	Residents with a dementia diagnosis and a symptom onset before the age of 65 who resided on the YOD SCU for at least 1 month	Skills/knowledge of staff In-person	Care as usual	Patient outcomes	High Conflicts of interest: None This study was supported by a grant from the National Health and Medical Research Council
Pieper, 2016[64]	N=288	Moderate to severe cognitive impairment (GDS 5-7)	Skills/knowledge of staff	Care as usual	Patient outcomes	High

Study	Sample Size *Follow-Up*	Population	Intervention Characteristics	Comparator	Outcomes Assessed	Risk of Bias Rating
	3 months and 6 months	No psych diagnosis other than dementia Significant behavioral challenges (NPI-NH > 4 or CMAI > 44) Written proxy consent available	In-person			Conflicts of interest: None Innovatiefonds Zorgverzekeraars (Dutch funding agency)
Smeets, 2021[63]	N=380 *6 months, 12 months, and 18 months*	All residents living in the 31 Dementia Special Care Units (DSCUs) were eligible to participate in the study if they had a diagnosis of dementia.	Multidisciplinary coordination; Skills/knowledge of staff In-person	Care as usual	Patient outcomes	High Conflicts of interest: None Netherlands Organization for Health Research and Development for funding. Supported by the Dutch association for residential and home care organizations, and the Dutch Health Care Inspectorate
Testad, 2005[73]	N=151 *6 months and 12 months*	NR	Skills/knowledge of staff; increasing capacity of staff	Care as usual	Patient outcomes	High Conflicts of interest: None Norwegian Research Council
Testad, 2010[71]	N=211 *7 months*	Diagnosis of dementia based on medical records and corroborated with a Functional Assessment Staging (FAST) score	Skills/knowledge of staff	Care as usual	Patient outcomes	High Conflicts of interest: Last author has received honoraria and research support from Lundbeck, Novarits, GE Health, and Merck Serono Norwegian Research Council
Wilkes, 2005[75]	N=23 *3 months and 6 months*	NR	Other In-person	Care as usual	Patient outcomes	N/A Conflicts of interest: Not reported Not reported

Study	Sample Size *Follow-Up*	Population	Intervention Characteristics	Comparator	Outcomes Assessed	Risk of Bias Rating
Wingenfeld, 2011[69]	N=202 *6 months*	Age of resident 60 years or older, receiving inpatient care (exclusion of short-term care guests), Stayed in the living area for at least 1 month, Completed the first and the last survey	Skills/knowledge of staff In-person	Care as usual	Patient outcomes	N/A Conflicts of interest: None Not reported
KQ2 High/Serious ROB						
Smith, 2010[77]	N=90 *3 times per month x 7 months ; falls 8 months prior and 8 months after transition*	Residents of an existing NH setting (The Hammond Village; Sinclair Home) who were moved to Southwood Cottages when the Sinclair Home was closed; also included new residents to the Southwood Cottages not in the Sinclair Home - from community or other "aged-care facilities"	Skills/knowledge of staff; other: environmental changes (transition to) In-person	Care as usual	Patient outcomes	Serious Conflicts of interest: Not reported Hammond Care postgraduate research scholarship to the University of Sydney
KQ3 High/Serious ROB						
Fletcher, 2019[79]	N=103 *12 months*	Current staff on 14 wards from 6 of the sev7en health services that implemented Safewards	Skills/knowledge of staff In-person	Care as usual	Staff outcomes	Serious Conflicts of interest: None Australian Government Research Training Program Scholarship; NHMRC PhD Research Scholarship; Office of the Chief Mental Health Nurse, in the Department of Health and Human Services, Government of Victoria
Narevic, 2011[80]	N=267 *Over 15 months*	Patients who were admitted to the facility for at least five consecutive days during the study period	Skills/knowledge of staff In-person	Care as usual	Patient outcomes	Serious Conflicts of interest: Not reported Not reported

STUDY CHARACTERISTICS FOR STAR-VA STUDIES

Study	Sample Size *Follow-Up*	Population	Intervention Characteristics	Comparator	Outcomes Assessed	Conflict of Interest Funding
Jedele 2020[85]	N=302 patients (71 Community Living Centers) *6 months*	Veterans were enrolled if they had dementia and repeated destressing behaviors. Veterans were excluded if these behaviors were directly related to delirium, acute medical illness, or acute psychotic symptoms. Veterans were also excluded if they were deemed medically unstable or receiving hospice care.	Training included 4 core components: appropriate expectations of individuals with dementia, effective verbal and nonverbal communication, utilizing the ABC behavioral model, increasing person-centered pleasant events in daily care.	Baseline rates of patient outcomes	Patient outcomes (distress behaviors)	Conflict: none declared Funding: Quality Enhancement Research Initiative Partnered Evaluation Grant and matching support from the Office of Mental Health and Suicide Prevention, Veterans Health Administration
Karel 2016[86]	N=71 patients; 126 staff (17 Community Living Centers) *6 months*	126 staff from 12 sites provided anonymous survey feedback. Veterans were enrolled if they had dementia and repeated destressing behaviors. Veterans were excluded if these behaviors were directly related to delirium, acute medical illness, or acute psychotic symptoms.	Sixteen mental health providers and 16 nurse champions completed the STAR-VA psychotherapy training program from 17 community living centers that completed the 6-month telephone consultation period	Baseline rates of target behaviors and Cohen-Mansfield agitation inventory	Patient outcomes (challenging behaviors); provider outcomes (perceived feasibility and effectiveness)	Conflict: not reported Funding: Mental Health Services, Department of Veterans Affairs Central Office
Karlin 2014[47]	N=21 Mental health providers; 71 veterans *6 months*	21 mental health providers were psychologists. Staff Partners included nursing assistants, registered nurses, recreation therapists, social workers, occupational therapists, and physical therapists. Of the 71 Veterans, 64 completed the intervention.	Intervention consisted of 3 primary components (identifying and changing activators and results of challenging behaviors; increasing personally important pleasant events; promoting communication and expectations)	Baseline rates of patient outcomes	Patient outcomes (challenging behaviors); provider outcomes (self-efficacy/skill development; utility and effectiveness of STAR-VA)	Conflict: not reported Mental Health Services, VA Central Office
Mohr 2022[87]	120 unique CLCs within the VA *(2013-2017)*		STAR-VA consisted of realistic expectations of residents, adjusting interpersonal interactions and environment, as well as promoting individual pleasant events.	Pre-intervention data (2012)	Patient outcomes (disruptive behaviors); provider outcomes (staff injury after STAR-VA training)	Conflict: none declared Department of Veterans Affairs, Veterans Health Administration Office of Research and Development, QUERI, and HSR&D
McConeghy 2021[88]	229 STAR-VA sites; 1,163 untrained sites	17- 23 CLC sites enrolled in STAR-VA per year; patients enrolled included Veterans with diagnosis of dementia, destressed behaviors occurring at least weekly. Veterans with mental illness, delirium, or hospice care were	Intervention consisted of 3 primary components (identifying and changing activators and results of challenging behaviors;	Comparator data from non-STAR-VA sites	Patient outcomes (psychotropic drug use)	Conflict: none declared Department of Veterans Affairs, Veterans Health

Study	Sample Size *Follow-Up*	Population	Intervention Characteristics	Comparator	Outcomes Assessed	Conflict of Interest Funding
	(2013-2017)	excluded. The same criteria were applied to control patients who did not reside at a pilot STAR-VA site.	increasing personally important pleasant events; promoting communication and expectations)			Administration, Offices of Mental Health and Suicide Prevention and Geriatrics and Extended Care, and the Office of HSR&D Partnered QUERI

Abbreviations. ABC=activators, behaviors, consequences.

INTERVENTION CHARACTERISTICS

Refer to the main report's reference list for full citations.

Study **Country** **Intervention Name**	**Setting** **Target Patient Population**	**Narrative Description of Intervention**	**Dose of Intervention** **Who Delivered Intervention**	**Staff Disciplines Receiving Intervention** **Intervention Delivery Mode**	**Underpinning Theories**	**Core Components**
Patient-Only						
Cohen-Mansfield 2007[54] USA Treatment Routes for Exploring Agitation (TREA)	Nursing home Patients with dementia excluding those with physically aggressive behaviors	TREA involves assessing the nature of a patient's unmet need (*eg*, loneliness, boredom, discomfort), presumably leading to a disruptive behavior, and then having a prescribed response to the unmet need. Person-centered care with decision tree protocol	Delivered for 10 consecutive days. The exact time of the interventions varied depending on the resident's medical and psychological condition. Research assistant	Not specified In-person	Cohen-Mansfield J. Theoretical frameworks for behavioral problems in dementia. Alz Care Quart. 2000.	Detection and diagnosis Assessment and care planning
Cohen-Mansfield 2012[50] USA Treatment Routes for Exploring Agitation (TREA)	Nursing home Patients with dementia	TREA involves assessing the nature of a patient's unmet need (*eg*, loneliness, boredom, discomfort), presumably leading to a disruptive behavior, and then having a prescribed response to the unmet need. Person-centered care with decision tree protocol	A "short presentation of the intervention or a request to staff for a care activity and observation as to whether that presentation resulted in a change in agitation, interest, or pleasure. Those activities with the most beneficial effect during the trials were subsequently used during the 2-week treatment phase during the 4 hours identified as having the highest levels of agitation" Research assistant	NH staff In-person	Cohen-Mansfield J. Theoretical frameworks for behavioral problems in dementia. Alz Care Quart. 2000.	Detection and diagnosis Assessment and care planning
Eritz 2016[59] Canada	Long-term care facilities Patients with dementia	Life History Intervention: Resident life histories were gathered and used to inform care and connection of staff with residents.	Not clearly reported; staff presented with patient history once verbally and then the materials were placed in patient rooms and medical charts for review. Research team	Nurses, special care aids, resident care coordinator, registered psychiatric nurses. In-person	Person-centered care model	Assessment and care planning

Study **Country** **Intervention Name**	**Setting** **Target Patient Population**	**Narrative Description of Intervention**	**Dose of Intervention** **Who Delivered Intervention**	**Staff Disciplines Receiving Intervention** **Intervention Delivery Mode**	**Underpinning Theories**	**Core Components**
Staff-Only						
Deudon 2009[51] France	Nursing home Patients with dementia	Staff education program with instruction cards about general guidelines and nonpharmacologic interventions plus individual coaching	After initial 90-minute training session, individual coaching 2 hrs. twice a week for 1 month, then 1 session a week in the second month "Two independent professionals with extensive experience of working with residents with dementia"	NH staff In-person	NR	General education Skills & Implementation training
Fukuda 2018[41] Japan	Residential aged care facilities Patients with dementia	Education program using guidelines for Initial Coping with behavioral and psychological symptoms of dementia (BPSD)	30-min educational lecture about BPDS and 90-min explanation of how to use the BPDS Guidelines Researchers	All care staff In-person	NR	General education
Leone 2012[61] France STIM-EHPAD	Nursing homes Patients with dementia	Staff education and coaching sessions on Alzheimer's disease and pathologies and approaches to handling patient apathy	Initial training: 2 hrs; Second phase: 2-hr training sessions twice/wk for 1 month; Third phase: workshops 2 hrs/week for 4 weeks NR	All staff members In-person	NR	General education Skills & implementation training
Livingston 2019[38] UK Managing Agitation and Raising Quality of Life (MARQUE)	Care homes Patients with dementia	6 skills sessions with topics included "getting to know person with dementia", "pleasant events", improving communication", "understanding agitation", "practical responses and making a plan", "work works? Using skills and strategies in the future" + monthly supervision meetings	6 sessions Facilitators, psychologist	Care assistants, nurses, activities coordinators, managers in-person	NR	General education Skills & implementation training

Study **Country** **Intervention Name**	**Setting** **Target Patient Population**	**Narrative Description of Intervention**	**Dose of Intervention** **Who Delivered Intervention**	**Staff Disciplines Receiving Intervention** **Intervention Delivery Mode**	**Underpinning Theories**	**Core Components**
Teri 2005[56] USA Staff Training in Assisted-living Residences (STAR)	Assisted living facilities Patients with dementia	STAR includes a series of modules for staff on the activators, behaviors, and consequences of behavioral distress to alter the subsequent sequence of events; Workshops include lecture and discussion, role playing, observation of video case vignettes, and handouts	Two half-day group workshops and four individualized sessions over 2 months. A clinical psychologist and a graduate student in nursing, each with geriatric mental health experience.	Assisted-living staff In-person	Integrated model of person–environment fit and social learning theory	General education Skills & implementation training
Testad 2016[43] Norway Trust Before Restraint	Care homes Patients with dementia	Educational intervention to understand unmet needs to reduce restraint use + guidance groups to support care staff finding alternative solutions to restraint and medications	2-day seminar (16 h) and followed by 1-h monthly seven step guidance groups over 6 months. Clinical research nurses	All staff working at the care home. In-person	Relation Related Care	Skills & implementation training Staffing [guidance groups]
Staff + Patient						
Appelhof, 2019[39] Netherlands BEYOND-II Study	Nursing home Young-onset dementia	An educational program combined with an intervention to manage neuropsychiatric symptoms (NPS) through 5 steps: evaluation of psychotropic drug prescription, detection, analysis, treatment, and evaluation of NPS.	Two training sessions (2.5 and 1.5 hours) nurse, physician, psychologist	MDs; Psychologists; Nurses In-person	NR	General education Detection and diagnosis Assessment and care planning Medical management Ongoing care for BPS of dementia and support ADLs
Ballard 2018[40] UK WHELD	Nursing homes Patients with dementia	The WHELD program combines “staff training, social interaction, and guidance on use of antipsychotic medications” Sessions were manualized and involved didactic sessions, experiential learning, individual goal setting, also included on-site consultation and coaching	Orientation phase: 1 month (spent 2 whole days or 4 half days in each home) Intervention delivery phase: 8 months (months 2-9) -Months 2-5: Training delivered to WHELD champions 1 day (6 hours) per month for each care home -Months 6-9: On-site consultation sessions totaling 8 hours per month with each care home. WHELD therapists provided training to WHELD champions	Care home managers, staff teams, local WHELD champions, and residents	NR (Noted to promote person-centered care)	Medical management Ongoing care for BPS of dementia and support ADLs Skills & implementation Assessment and care planning

Study **Country** **Intervention Name**	**Setting** **Target Patient Population**	**Narrative Description of Intervention**	**Dose of Intervention** **Who Delivered Intervention**	**Staff Disciplines Receiving Intervention** **Intervention Delivery Mode**	**Underpinning Theories**	**Core Components**
			(care staff), and WHELD champions then implemented what they learned to nursing homes			
Ballard 2016[57] UK WHELD	Nursing homes Patients with dementia	Compared 3 intervention intended to deliver person-centered care: 1) antipsychotic review, 2) intervention to increase social interaction, 3) exercise intervention (factorial design: 2x2x2); all received patient-centered care training	NR The interventions were delivered by a therapist who had attended an intensive 10-day training program and who coordinated the delivery of the intervention into all homes assigned to that intervention. In each home a minimum of 2 lead staff members were trained to implement the intervention.	Nursing home staff, physicians In-person	NR (Noted to promote person-centered care; "primarily used tools developed for the Focused Intervention for Training of Staff or FITS program)	*Antipsychotic review* Medical management Ongoing care for BPNS Skill & implementation *Social interactions with pleasant activities* Skills & implementation General education Assessment and care planning
Chapman 2007[53] USA The Advanced Illness Care Teams (AICTs)	Nursing home Patients with dementia	The Advanced Illness Care Teams (AICTs) addressed four domains of care: (1) medical issues, (2) meaningful activities, (3) psychological problems, and (4) behavioral concerns	Each AICT met five times (weeks 1, 2, 3, 5, and 8) during the eight-week intervention period. Experienced and licensed clinical social workers provided in-person or telephone consultation to the AICTs during meetings and conducted treatment fidelity checks.	NH Staff including physicians, nurses, social workers, psychologists, physical and occupational therapists, and nutritionists. In-person	Care models based on Volicer 2001; Volicer & Bloom-Charette, 1999; McCallion et al, 1999, and Cohen-Mansfield, et al, 1989.	Staffing Medical management Assessment and care planning Ongoing care for BPS of dementia and support ADLs
Chenoweth 2014[46] Person-centered Care (PCC) arm Australia PerCEN study	Residential aged care homes Patients with dementia	Staff training focused on paying attention to the residents' feelings when agitated, interacting with residents in a person-centered way and using person-centered care planning to meet the residents' psychosocial needs, followed by on-site supervision in these processes and telephone support.	32 hours off-site training, plus on-site supervision for 2-16 hrs. plus telephone support Two experts in PCC and 1 PCC trainer from Alzheimer's Australia	Nurses; CNAs; Care managers; Diversion/ Recreation Therapist	NR	Assessment and care planning Skills & implementation training

Study **Country** **Intervention Name**	**Setting** **Target Patient Population**	**Narrative Description of Intervention**	**Dose of Intervention** **Who Delivered Intervention**	**Staff Disciplines Receiving Intervention** **Intervention Delivery Mode**	**Underpinning Theories**	**Core Components**
Chenoweth 2009[52] Person-centered care (PCC) arm Australia CADRES study	Nursing home Patients with dementia	Staff training challenging beliefs about dementia, staff then developed and implemented care plans with new knowledge, plus PI support by phone. .	PCC: 2-day training session for 2 care staff members + 2 site visits + regular phone support x 4-month intervention period	Nurses; other types of aides; case managers 2 staff members at each nursing home In person; telephone	NA	general education Assessment and care
Chenoweth 2009[52] Dementia-care mapping (DCM) arm Australia CADRES study	Nursing home Patients with dementia	Staff training followed by structured observations and implementation of patient care plans designed by study investigators, plus PIs for support by phone	Unspecified training for 2 local staff + 6 hours per day x 2 days observations + telephone support during 4-month intervention period Researchers with accredited training	2 staff members at each nursing home In person; telephone	NA	Skills & implementation training Detection and diagnosis Assessment and care planning
Fossey 2006[55] UK	Nursing home Elderly mentally impaired (>25% with dementia)	Training and support intervention delivered to nursing home staff focusing on alternatives to drugs for the management of agitated behavior in dementia, specifically person-centered care and skills development.	Two days a week for 10 months plus weekly supervision Trial clinician	NH staff In-person	NR	Skills & implementation training Medical management
Moniz-Cook 2017[62] UK ResCare	Care home Patients with dementia	E-learning (Functional Analysis training) and decision support to help care home staff support residents with commonly occurring challenging behaviors using simulated case studies.	Internet-based training and decision-support algorithm Specialist dementia care therapist	Care staff Internet-based	NPT- Normalization process theory (May et al, 2007)	Skills & implementation training Assessment and care planning
Kirkham 2020[37] Canada The Optimizing Prescribing of Antipsychotics in	Long term care homes with high antipsychotic use	An educational in-service of evidence-based tools to assess and monitor NPS, monthly interdisciplinary team meetings about the reduction of antipsychotics	One 90-minute education session followed by three monthly team meeting. Study investigators	Physicians, nurses, pharmacists, other health professionals In-person; teleconferencing	DICE model (Kales, 2015)	General education Skills & implementation training Medical management Assessment and care planning

Study **Country** **Intervention Name**	**Setting** **Target Patient Population**	**Narrative Description of Intervention**	**Dose of Intervention** **Who Delivered Intervention**	**Staff Disciplines Receiving Intervention** **Intervention Delivery Mode**	**Underpinning Theories**	**Core Components**
Long-term care (OPAL) program						
Klapwijk 2018[33] Netherlands STA OP!	Nursing homes Patients with dementia	A stepwise multicomponent intervention to reduce both behavioral symptoms and psychotropic drug use: 1) care needs assessment, 2) pain and physical needs assessment, 3) affective needs assessment, 4) nonpharmacologic comfort treatment, 5) consultation with other disciplines or trial psychotropic drugs. Process repeated if symptoms continued	Unspecified frequency for training over first 3 months of study period. Unspecified	Care staff including physicians and nurses. In-person	Skills training Patient assessment Multidisciplinary coordination meetings+	Assessment and care planning Medical management Ongoing care for behavioral-psychological symptoms of dementia and support ADLs Staffing
Kovach 2006[58] USA Serial Trial Intervention (STI)	Nursing homes Patients with dementia	A 5-step clinical protocol for assessment and management of unmet needs: 1) physical needs assessment, 2) affective needs assessment, 3) trial individualized nonpharmacologic comfort treatments, 4) trial analgesics, 5) consultation with other disciplines or trial psychotropic drug	One 7-hour education session + twice weekly check-ins 2 APNs	Nurses with at least 6 months experience caring for patients with dementia and work 32 hours or more per week on dayshift. In-person	Consequences of need-driven dementia theory (Kovach et al 2005). J Nurs Scholarsh. 2005;37:134-140.	Skills and implementation training Medical management Assessment and care planning Ongoing care for behavioral-psychological symptoms of dementia and support ADLs Staffing
Lichtwarck 2018[42] Norway Targeted interdisciplinary model for evaluation and treatment of neuropsychiatric symptoms (TIME)	Nursing homes Patients with dementia	An interdisciplinary multi-component intervention including education on NPS and dementia (both arms), comprehensive patient assessment and tailored treatment plan creation with 3 phases: registration and assessment phase, guided reflection phase, action and evaluation phase.	2-hour lecture on NPS and dementia + 3 hour lecture and role play +supervision of first case conference meeting; 3 nurses responsible for implementation at each received an additional 3 hours of training	MDs; Nurses In-person	Cognitive behavioral therapy and person-centered care	Skills & implementation training Medical management Detection and diagnosis Assessment and care planning Staffing Ongoing care for behavioral-psychological symptoms of dementia and support ADLs

Study **Country** **Intervention Name**	**Setting** **Target Patient Population**	**Narrative Description of Intervention**	**Dose of Intervention** **Who Delivered Intervention**	**Staff Disciplines Receiving Intervention** **Intervention Delivery Mode**	**Underpinning Theories**	**Core Components**
Mork Rokstad 2013[60] Norway Dementia Care Mapping (DCM); VIPS Practice Model (VPM)	Nursing homes Patients with dementia	DCM: a 4–6-hour observational process by external experts and information provided to staff to implement PCC and develop staff skills.	DCM: a basic DCM certification course for 2 care staff per ward. Rest of staff received 3-hour lecture. DCM certification (who provided training: NR) Lecture by researchers	Nurses; care staff members In-person	NR	Skills & implementation training Assessment and care planning
		VPM: a weekly consensus meeting to analyze challenging patient-nurse interaction chaired by nurses and with patient's primary nurse representing patient.	VPM: 3-hour training by all staff + 3-day course for local leader For VPM, trainings conducted by the researchers; 3-hour introductions for both arms given by researchers	Nurses; care staff members	VIPS framework	Skills & implementation training Assessment and care planning Staffing
Rapp 2013[49] Germany VIDEANT	Nursing homes Patients with dementia	Intervention includes training of nursing home staff (symptomatology and cases of behavioral symptoms, standardized assessments and pharmacologic and nonpharmacologic interventions), use of physical and activity therapy, and optimization of pharmacologic interventions	2 four-hour education segments in one day for staff Primary care psychiatrists trained in individual 4-hour sessions each. Physician and a nurse specialized in geriatric psychiatry	Nursing home staff Primary care psychiatrists In person	NR	General education Skills & implementation Assessment and care planning
Stensvik 2022[34] Norway	nursing homes Residents of regular care units	Monthly modified case conference, assessments of NPS, individualized care plans	4-hour training to train RN and NH leadership at each site to lead the intervention + monthly assessments followed by case conferences Researcher RNs	Nurses In person	NR	Detection and diagnosis Assessment and care planning Staffing Skills & implementation training General education

Study **Country** **Intervention Name**	**Setting** **Target Patient Population**	**Narrative Description of Intervention**	**Dose of Intervention** **Who Delivered Intervention**	**Staff Disciplines Receiving Intervention** **Intervention Delivery Mode**	**Underpinning Theories**	**Core Components**
van de Ven 2013[48] Netherlands Dementia-Care Mapping (DCM)	Care homes Patients with dementia	Method of creating action plans based on systematic observations of individual patients; at least 2 cycles of observation, feedback, and action plans	2 staff from each home attended basic (4-day course) and advanced training (3-day course) on DCM 1 day training for all staff at participating homes DCM Netherlands	Staff members	Person-centered care principles	Skills & implementation training Assessment and care planning staffing Ongoing care for behavioral-psychological symptoms of dementia and support ADLs
Zwijsen 2014[45] Netherlands Coming to Grips with Challenging Behavior Care Program	Nursing homes Patients with dementia	A care program with structured process of detection, analysis, treatment, and evaluation of treatment of challenging behavior and pre-arranges multidisciplinary consultation. Baseline training on models of challenging behavior, negative consequences of psychoactive medications, and alternative approaches.	1 full day of training broken into 2 training meetings, 2 weeks apart NR	Staff (nurses, psychologists, and elderly care physicians) In-person	NR	Skills & implementation training General education Detection and diagnosis Staffing Assessment and care planning Ongoing care for behavioral-psychological symptoms of dementia and support ADLs
Staff + Patient + Environment						
Galik 2015[44] USA The Function Focused Care Intervention for the Cognitively Impaired (FFC-CI)	Assisted living MMSE score of <15; anticipated stay > 6 months	FFC-CI is a 4-component intervention: 1) evaluation of person-environment fit; 2) education; 3) establishing goals for residents; 4) mentoring and sustainability	10hr /week for 6 months Study-supported nurse	Direct care workers, other members of health care team, families, residents In-person	Social ecological model & social cognitive theory	Skills & implementation training Supportive and therapeutic environments Assessment and care planning
Galik 2021[35] USA Function and Behavior Focused Care for the	Nursing homes MMSE score of <15; anticipated stay > 6	Four intervention components: 1) assessment of policies and environment, 2) education and training, 3) resident Goal setting, 4) ongoing training and motivation for staff	10 hours per week for 12 months Function and Behavior Focused Care Research Nurse	Nurses; facility-based champions (nurses or activity staff) In-person	Social ecological model & social cognitive theory	Skills & implementation training Supportive and therapeutic environments Assessment and care planning

Study **Country** **Intervention Name**	**Setting** **Target Patient Population**	**Narrative Description of Intervention**	**Dose of Intervention** **Who Delivered Intervention**	**Staff Disciplines Receiving Intervention** **Intervention Delivery Mode**	**Underpinning Theories**	**Core Components**
Cognitively Impaired (FBFC-CI)						
Resnick 2021[36] USA Focused Care for Assisted Living Using the Evidence Integration Triangle (FFC-AL-EIT)	Assisted living facilities Assisted living residents, able to recall at least 1 of 3 words as part of mini cog.	Intervention has a multistep approach: 1) recurrent local stakeholder multidisciplinary team meetings, 2) environmental and policy assessments, 3) function focused care plans for residents, 4) environmental and policy assessment and ongoing mentoring	Monthly meeting over 12 months; 2 hours per month Research nurse facilitator	Nurses; social workers; activities director Facility champion In-person; internet-based	Social cognitive therapy, social ecological model, evidence integration triangle model	Supportive and therapeutic environments Assessment and care planning Ongoing care for BPS of dementia and support ADLs Staffing Skills & implementation training

INTERVENTION CODING DOMAINS AND OPERATIONALIZED DEFINITIONS

Coding domains are adapted from the Alzheimer's Association Dementia Care Practice Recommendations: Dementia Care Practice Recommendations |Alzheimer's Association.[10]

Patient-Level	Definition
Detection and diagnosis	Mentoring/identifying for symptoms or unmet needs
Assessment and care planning	Individualized care plan development
Ongoing care for behavioral-psychological symptoms of dementia and support ADLs	Ongoing monitoring and/or evaluating effectiveness of practices and adjusting as needed
Medical management	Medication review (*eg*, antipsychotic medications)
	Addressing uncontrolled medical diagnoses
	Addressing uncontrolled psychological diagnoses
Staff-Level	
Information, education, and support	Education programs about dementia specifically and general nonpharmacologic approaches to addressing unmet needs and managing distress behaviors
	Would NOT include training on a change in process or protocol otherwise captured in other domains
Staffing	Care coordination (*eg*, multidisciplinary team meetings)
	Changes to team composition (*eg*, hiring a new discipline)
Environment	
Supportive and therapeutic environments	Approaches that impact or adjust physical environment to meet patient needs
Transitions	
Transitions and coordination of services	Approaches related to preparing for transitions from one care level to another

STUDIES EXCLUDED DURING FULL-TEXT SCREENING

Citation	Exclude Reason
Allen, 2000[1]	Ineligible population
Almutairi, 2022[2]	Ineligible intervention
Andersen, 2017[3]	Ineligible study design
Anonymous, 2002[4]	Ineligible publication type
Appelhof, 2018[5]	Ineligible outcome
Arco, 2006[6]	Ineligible study design
Ayalon, 2009[7]	Ineligible publication type
Bakerjian, 2020[8]	Ineligible intervention
Beck, 2002[9]	Ineligible intervention
Bharani, 2005[10]	Ineligible publication type
Bhat, 2020[11]	Ineligible population
Bielderman, 2021[12]	Ineligible population
Bird, 2009[13]	Ineligible intervention
Bjorkdahl, 2013[14]	Ineligible population
Blair, 2017[15]	Ineligible population
Boettcher, 2004[16]	Ineligible study design
Borbasi, 2010[17]	Ineligible publication type
Bradshaw, 2004[18]	Ineligible population
Buisson, 2019[19]	Ineligible study design
Burack, 2012[20]	Ineligible study design
Burgio, 2004[21]	Ineligible study design
Burgio, 2002[22]	Ineligible date
Carbone, 2021[23]	Ineligible intervention
Chao, 2005[24]	Ineligible country
Chen, 2016[25]	Ineligible country
Chenoweth, 2007[26]	Ineligible study design
Chiappinotto, 2022[27]	Ineligible intervention
Chou, 2016[28]	Ineligible intervention
Chou, 2011[29]	Ineligible country
Chrzescijanski, 2007[30]	Ineligible study design
Chung, 2004[31]	Ineligible country
Ã‡oban Arguvanli, 2015[32]	Ineligible population
Cohen-Mansfield, 2006[33]	Ineligible intervention
Cohen-Mansfield, 2010[34]	Ineligible intervention
Cohen-Mansfield, 2014[35]	Ineligible intervention
Crotty, 2004[36]	Ineligible intervention
da Silva Serelli, 2017[37]	Ineligible country
Dechamps, 2010[38]	Ineligible study design
DeYoung, 2002[39]	Ineligible study design

Citation	Exclude Reason
DiBartolo, 2013[40]	Ineligible study design
Dichter, 2015[41]	Ineligible study design
Dobbs, 2018[42]	Ineligible outcome
Duinen-van den Ijssel, 2020[43]	Ineligible outcome
Egan, 2007[44]	Ineligible intervention
Eggermont, 2010[45]	Ineligible intervention
Eisch, 2000[46]	Ineligible intervention
Engst, 2004[47]	Ineligible intervention
Fitzler, 2016[48]	Ineligible study design
Fitzwater, 2002[49]	Ineligible study design
Garland, 2007[50]	Ineligible intervention
Gerdner, 2005[51]	Ineligible intervention
Gerolimatos, 2018[52]	Ineligible study design
Gillis, 2019[53]	Ineligible study design
Gonzalez-Fraile, 2021[54]	Ineligible study design
Graske, 2019[55]	Ineligible setting
Hawranik, 2008[56]	Ineligible intervention
Hazelhof, 2014[57]	Ineligible intervention
Henskens, 2018[58]	Ineligible intervention
Hicks-Moore, 2005[59]	Ineligible intervention
Hicks-Moore, 2008[60]	Ineligible intervention
Holle, 2015[61]	Ineligible outcome
Holm, 1999[62]	Ineligible date
Hong, 2011[63]	Ineligible intervention
Hsu, 2015[64]	Ineligible study design
Husebo, 2011[65]	Ineligible intervention
Husebo, 2015[66]	Ineligible outcome
Irvine, 2013[67]	Ineligible outcome
Isaac, 2021[68]	Ineligible study design
Jervis, 2002[69]	Ineligible intervention
Kerssens, 2014[70]	Ineligible intervention
Kim, 2005[71]	Ineligible intervention
Klapwijk, 2018[72]	Ineligible outcome
Koczy, 2011[73]	Ineligible outcome
Kolanowski, 2011[74]	Ineligible intervention
Koskas, 2011[75]	Ineligible study design
Kovach, 2004[76]	Ineligible intervention
Kramarz, 2022[77]	Ineligible study design
Kuiper, 2009[78]	Unable to locate full text
Landreville, 2005[79]	Ineligible study design
Landreville, 2011[80]	Unable to locate full text

Citation	Exclude Reason
Lamppu, 2021[81]	Ineligible intervention
Lay, 2015[82]	Ineligible population
Lay, 2015[83]	Ineligible outcome
Lichtenberg, 2005[84]	Ineligible study design
Loi, 2017[85]	Ineligible intervention
Lykkeslet, 2016[86]	Ineligible study design
Maidment, 2020[87]	Ineligible outcome
Manepalli, 2009[88]	Ineligible study design
Massaia, 2001[89]	Ineligible intervention
McAiney, 2007[90]	Ineligible outcome
McCreedy, 2022[91]	Ineligible intervention
McGill, 2018[92]	Ineligible population
Meehan, 2001[93]	Ineligible intervention
Mickus, 2002[94]	Ineligible date
Monette, 2008[95]	Ineligible study design
Moniz-Cook, 1998[96]	Ineligible study design
Morgan, 2005[97]	Ineligible intervention
Morley, 2013[98]	Ineligible publication type
Muniz, 2021[99]	Ineligible intervention
O'Connell, 2020[100]	Ineligible population
Oh, 2005[101]	Ineligible study design
Opie, 2002[102]	Ineligible date
Orrell, 2007[103]	Ineligible intervention
Park, 2012[104]	Ineligible population
Pouwels, 2019[105]	Ineligible study design
Ray, 2017[106]	Ineligible intervention
Resnick, 2016[107]	Ineligible study design
Robert, 2021[108]	Ineligible intervention
Rose, 2014[109]	Ineligible population
Rosewarne, 1997[110]	Ineligible date
Rota-Bartelink, 2011[111]	Ineligible intervention
Roth, 2002[112]	Ineligible date
Ryan, 2018[113]	Ineligible study design
Ryden, 2000[114]	Ineligible date
Samus, 2013[115]	Ineligible outcome
Sanchez, 2016[116]	Ineligible intervention
Sansone, 2000[117]	Ineligible population
Shah, 1998[118]	Ineligible date
Sidani, 2012[119]	Ineligible study design
Simard, 2010[120]	Ineligible intervention
Sloane, 2004[121]	Ineligible intervention

Citation	Exclude Reason
Smit, 2012[122]	Ineligible outcome
Smith, 2010[123]	Ineligible population
Sprangers, 2015[124]	Ineligible study design
Stacpoole, 2015[125]	Ineligible study design
Stancliffe, 1999[126]	Ineligible date
Sutor, 2002[127]	Ineligible publication type
Thomas, 2005[128]	Ineligible population
Thomas, 2017[129]	Ineligible intervention
Tjia, 2017[130]	Ineligible study design
Torres-Castro, 2022[131]	Ineligible study design
Totsika, 2008[132]	Ineligible study design
Traynor, 2018[133]	Ineligible intervention
Tseng, 2019[134]	Ineligible country
Turner, 2009[135]	Ineligible study design
Tyrer, 2017[136]	Ineligible study design
van de Ven, 2012[137]	Ineligible study design
van der Velde-van Buuringen, 2021[138]	Ineligible intervention
van Duinen-van den, 2018[139]	Ineligible population
van Weert, 2005[140]	Ineligible study design
Veltro, 2006[141]	Ineligible population
Verbeek, 2010[142]	Ineligible study design
Verbeek, 2014[143]	Ineligible intervention
Vink, 2013[144]	Ineligible intervention
Volicer, 2006[145]	Ineligible intervention
Wells, 2000[146]	Ineligible date
Williams, 2011[147]	Ineligible population
Williams, 2017[148]	Ineligible outcome
Wouters, 2017[149]	Ineligible intervention
Yang, 2021[150]	Ineligible country
Yang, 2016[151]	Ineligible country
Zijlmans, 2011[152]	Ineligible population
Zijlmans, 2015[153]	Ineligible population
Zoder-Martell, 2014[154]	Ineligible population
Zwijsen, 2015[155]	Ineligible outcome

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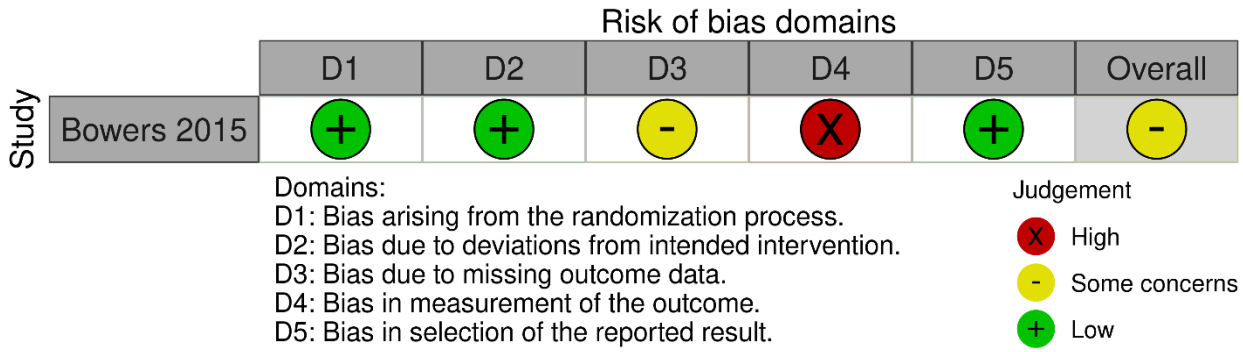
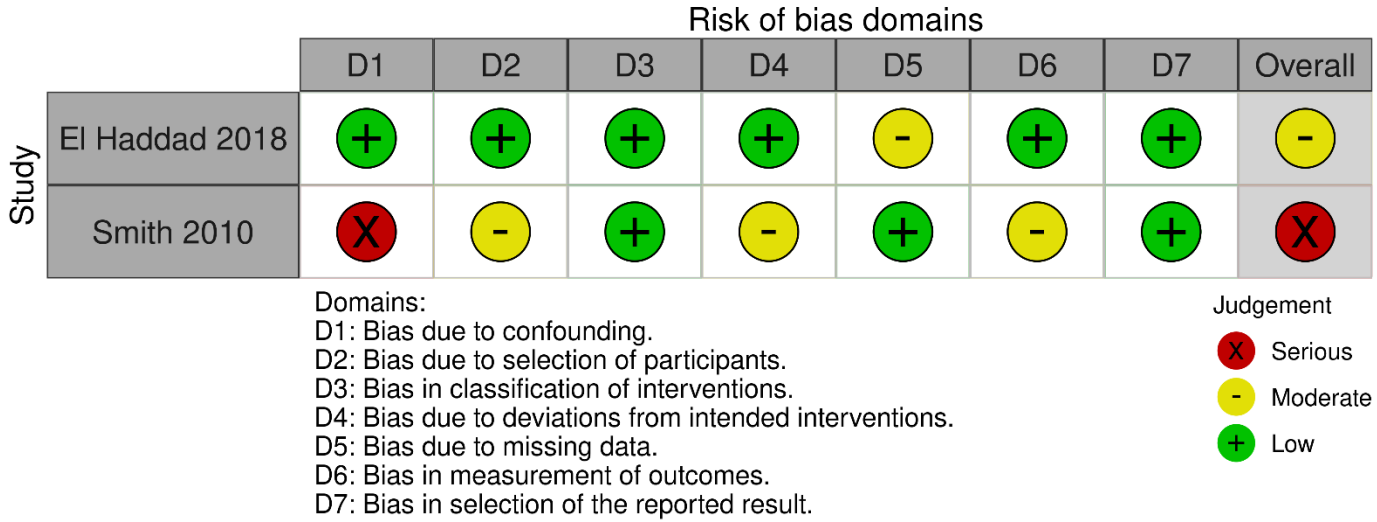
RISK OF BIAS ASSESSMENTS

KQ1 RANDOMIZED CONTROLLED TRIALS (ROB-2)

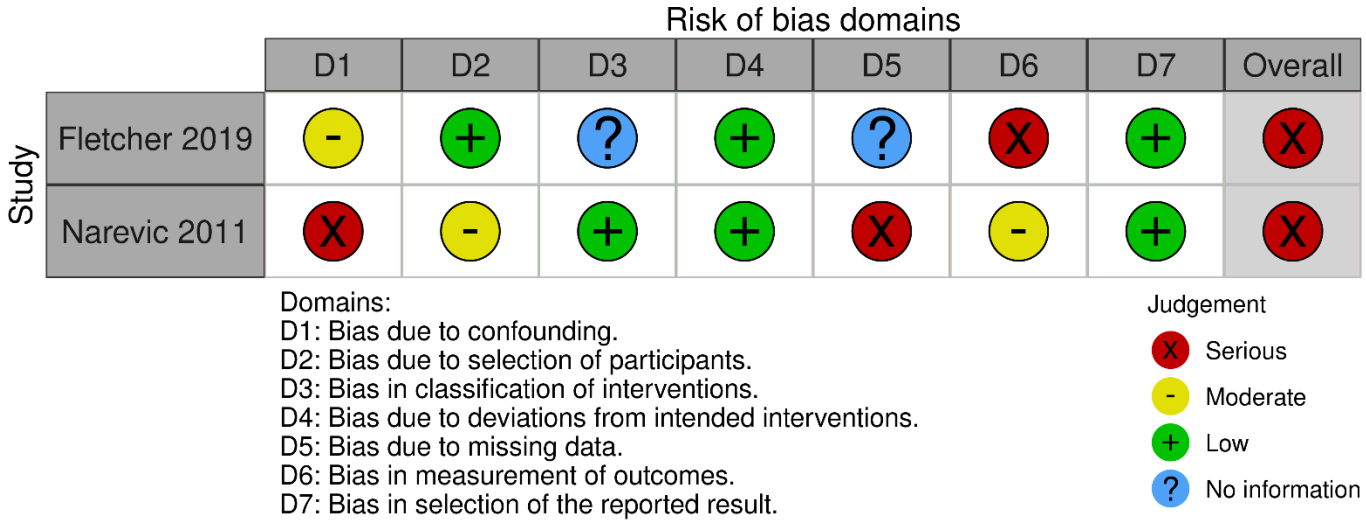
KQ3 RANDOMIZED CONTROLLED TRIALS (ROB-2)



KQ2 NONRANDOMIZED COMPARISON STUDIES (ROBINS-I)



KQ3 NONRANDOMIZED COMPARISON STUDIES (ROBINS-I)



RESULTS FOR HEALTH CARE WORKER-FOCUSED INTERVENTION COMPONENTS ONLY

Study N Clusters N Patients Primary outcome	Outcome Direction Follow-Up	Results
Health Care Teams-Only Interventions		
Deudon, 2009[51] 16 nursing homes 306 patients randomized Primary outcome: CAMI and observation scale	CMAI Lower=better 8 weeks 20 weeks	Baseline Staff training to manage behavioral and psychological symptoms of dementia: 53.08 (SD=18.1) Control: 48.21 (SD=15.9) 8 weeks Staff training to manage behavioral and psychological symptoms of dementia: 45.48 (SD=13.9) Control: 45.59 (SD=13.9) 20 weeks Staff training to manage behavioral and psychological symptoms of dementia: 47 (SD=16) Control: 47.54 (SD=18.1)
Testad, 2016[43] 24 care homes 274 patients randomized Primary outcome: use of restraint	CMAI Lower=better 7 months	Baseline Trust before restraint: 40.1 (SD=12.5) Control: 44.8 (SD=14.4) 7 month follow-up trust before restraint: 37 (SD=11.6) Control: 41.2 (SD=14.3) P value 0.078
Livingston 2019[38] 20 clusters 404 patients randomized Primary outcome: CMAI	CMAI Lower=better 8 months	Baseline Managing agitation and raising quality of life: 42 (SD=16) Treatment as usual: 44 (SD=15) 8 months follow-up Managing agitation and raising quality of life: 42 (SD=16) Treatment as usual: 44 (SD=17) Adjusted mean difference=-0.40 (95% CI [-3.89, 3.09]) (p value 0.8226)

Study N Clusters N Patients Primary outcome	Outcome Direction Follow-Up	Results
Deudon, 2009[51] 16 nursing homes 306 patients randomized Primary outcome: CAMI and observation scale	Observation Scale Lower=better 8 weeks 20 weeks	Baseline Staff training to manage behavioral and psychological symptoms of dementia: 22.22 (SD=31.9) Control: 13.26 (SD=20) 8 weeks Staff training to manage behavioral and psychological symptoms of dementia: 11.73 (SD=21.6) Control: 10.89 (SD=19.8) 20 weeks Staff training to manage behavioral and psychological symptoms of dementia: 7.58 (SD=14.7) Control: 9.91 (SD=15.8)
Fukuda, 2018[41] 17 long term care or nursing facilities 400 patients randomized Primary outcome: NPI	NPI Lower=better 30 days	Baseline Educational intervention mean: 27.5 (SD=22.6) Control mean: 25.5 (SD=27.3) 30-day follow-up Educational intervention mean: 22.7 (SD=23.4) Control mean: 25.1 (SD=26.7)
Teri, 2005[56] 4 assisted living residencies 31 patients randomized Primary outcome: NR	NPI Lower=better 8 weeks	Baseline STAR mean: 12.6 (SD=13.4) Control mean: 6.7 (SD=10.6) 8 weeks STAR mean: 9.1 (SD=9.3) Control mean: 9.4 (SD=13.2) Z score -2.15 (p value 0.031)
Testad, 2016[43] 24 care homes 274 patients randomized Primary outcome: use of restraint	NPI Lower=better 7 months	Baseline Trust before restraint mean: 12.1 (SD=12.3) Control mean: 18.2 (SD=17.5) 7 months Trust before restraint mean: 17.7 (SD=19.9) Control mean: 19.8 (SD=19.4) (p value 0.207)

Study N Clusters N Patients Primary outcome	Outcome Direction Follow-Up	Results
Livingston, 2019[38] 20 clusters 404 patients randomized Primary outcome: CMAI	NPI Lower=better 8 months	Baseline Managing agitation and raising quality of life: 14 (SD=14) Treatment as usual: 16 (SD=16) 8 months follow-up Managing agitation and raising quality of life: 14 (SD=16) Treatment as usual: 16 (SD=14) Adjusted mean difference: -0.84 (95% CI [-5.51, 3.84]) (p value 0.726)
Leone, 2012[61] 24 care homes 274 patients randomized Primary outcome: NR	NPI-ES- Affective Lower=better 4 weeks 3 months	Baseline Stimulation intervention group Affective subgroup mean 3.56 (SD=4.93) Usual care Affective subgroup mean 4.76 (SD=6.43) 4 weeks Stimulation intervention group Affective subgroup mean 5.84 (SD=6.32) Usual care Affective subgroup mean 4.36 (SD=5.71) Mean difference: 2.52 (SD=6.08) (p value < 0.01) 3 months Stimulation intervention Affective subgroup mean 4.41 (SD=6.21) Usual care Affective subgroup mean 4.70 (SD=5.70) Mean difference: 0.83 (SD=6.13) (p value < 0.01)
	NPI-ES- Apathy Lower=better 4 weeks 3 months	Baseline Stimulation intervention group Affective subgroup mean 5.91 (SD=4.65) Usual care Affective subgroup mean 5.18 (SD=4.64) 4 weeks Stimulation intervention group Affective subgroup mean 6.21 (SD=4.53)

Study N Clusters N Patients Primary outcome	Outcome Direction Follow-Up	Results
		Usual care Affective subgroup mean 4.72 (SD=4.29) Mean difference: 0.42 (SD=5.14) (p value > 0.05) 3 months Stimulation intervention Affective subgroup mean 5.94 (SD=4.63) Usual care Affective subgroup mean 5.10 (SD=4.65) Mean difference: -0.05 (SD=5.83) (p value > 0.05)
	NPI-ES- Hyperactivity Lower=better 4 weeks 3 months	Baseline Stimulation intervention group Affective subgroup mean 6.27 (SD=8.23) Usual care Affective subgroup mean 5.89 (SD=8.45) 4 weeks Stimulation intervention group Affective subgroup mean 7.0 (SD=9.06) Usual care Affective subgroup mean 6.15 (SD=8.12) Mean difference: 0.76 (SD=4.31) (p value p > 0.05) 3 months Stimulation intervention Affective subgroup mean 7.47 (SD=11.82) Usual care Affective subgroup mean 6.69 (SD=8.33) Mean difference: 1.2 (SD=9.81) (p value > 0.05)
	NPI-ES- Psychotic Lower=better 4 weeks 3 months	Baseline Stimulation intervention group Affective subgroup mean 2.15 (SD=4.48) Usual care Affective subgroup mean 2.16 (SD=5.02) 4 weeks Stimulation intervention group

Study N Clusters N Patients Primary outcome	Outcome Direction Follow-Up	Results
		Affective subgroup mean 3.12 (SD=5.96) Usual care Affective subgroup mean 1.28 (SD=2.87) Mean difference: 0.99 (SD=5.65) (p value < 0.01) 3 months Stimulation intervention Affective subgroup mean 2.77 (SD=5.69) Usual care Affective subgroup mean 2.18 (SD=4.30) Mean difference: 0.49 (SD=6.3) (p value < 0.01)
Deudon, 2009[51] 16 nursing homes 306 patients randomized Primary outcome: CMAI and OS	NPI-hyperactivity Lower=better 8 weeks 20 weeks	Baseline Staff training to manage behavioral and psychological symptoms of dementia: 49.89 (SD=53.1) Control 35.68 (SD=40) 8 weeks Staff training to manage behavioral and psychological symptoms of dementia: 43.62 (SD=51.2) Control 39.1 (SD=41.4) 20 weeks Staff training to manage behavioral and psychological symptoms of dementia: 44.87 (SD=51.7) Control 42.2 (SD=55.9)
	NPI-psychosis Lower=better 8 weeks 20 weeks	Baseline Staff training to manage behavioral and psychological symptoms of dementia: 10.22 (SD=14.7) Control 6.14 (SD=10.6) 8 weeks Staff training to manage behavioral and psychological symptoms of dementia: 8.46 (SD=13.3) Control 7.02 (SD=12.4) 20 weeks Staff training to manage behavioral and psychological symptoms of dementia: 8.68 (SD=13.5) Control 6.5 (SD=11.4)
Testad, 2016[43] 24 care homes	NPI-agitation scale Lower=better 7 months	Baseline Trust before restraint mean: 4.6 (SD=6.4) Control mean: 5.3 (SD=7.2)

Study N Clusters N Patients Primary outcome	Outcome Direction Follow-Up	Results
274 patients randomized Primary outcome: use of restraint		7 months Trust before restraint mean: 5.5 (SD=8.6) Control mean: 6.6 (SD=8.5) P value 0.702
Teri 2005[56] 4 assisted living residencies 31 patients randomized Primary outcome: NR	Agitated behavior in dementia Lower=better 8 weeks	Baseline STAR 9.4 (SD=6.5) Control 9.4 (SD=9) 8 weeks STAR 5.6 (SD=5.1) Control 9 (SD=9) Z score -6.75 (p value <0.001)
Deudon, 2009[51] 16 nursing homes 306 patients randomized Primary outcome: CMAI and OS	Difference in overall score on sub-index Uncertain 8 weeks 20 weeks	Baseline Staff training to manage behavioral and psychological symptoms of dementia: 31.02 (SD=5.50) Control 31.29 (SD=9.3) 8-week follow-up Staff training to manage behavioral and psychological symptoms of dementia 32.2 (SD=5.4) Control 32.61 (SD=10.1) 20-week follow-up Staff training to manage behavioral and psychological symptoms of dementia: 31.78 (SD=7.2) Control 30.78 (SD=8.6)
Deudon, 2009[51] 16 nursing homes 306 patients randomized Primary outcome: CMAI and observation scale	Psychotropic drugs Lower=better 8 weeks 20 weeks	Baseline Intervention: 2.52 (SD=1.3) Control: 2.68 (SD=1.65) 8-week follow-up Intervention: 2.62 (SD=1.3) Control: 2.76 (SD=1.6) 20 week follow-up Intervention: 2.51 (SD=1.3) Control: 2.81 (SD=1.6)

Study **N Clusters** **N Patients** **Primary outcome**	**Outcome** **Direction** **Follow-Up**	**Results**
Testad 2016[43] 24 care homes 274 patients randomized Primary outcome: use of restraint	Antipsychotics Lower=better 7 months	Baseline Trust before restraint: 14.70% Control: 35.90% 7 month follow-up Trust before restraint: 17.70% Control 38.40%
Livingston, 2019[38] 20 clusters 404 patients randomized Primary outcome: CMAI	Psychotropic medication Lower=better 8 months	Baseline Managing agitation and raising quality of life: 75/189 Treatment as usual 107/215 8 month follow-up Managing agitation and raising quality of life: 66/155 Treatment as usual 78/163 Adjusted odds ratio: 1.20 (95% CI [0.61, 2.39]) (p value 0.597)
Livingston, 2019[38] 20 clusters 404 patients randomized Primary outcome: CMAI	DEMQOL-Proxy Higher=better 8 months	Managing agitation and raising quality of life vs treatment as usual adjusted mean difference: 0.09 (95% CI [-3.87, 4.05])

RESULTS FOR HEALTH CARE TEAM AND PATIENT INTERVENTIONS

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
Health Care Team and Patient Interventions		
Lichtwarck, 2018[42] 33 nursing homes 229 patients Primary outcome: NPI	CMAI Higher=better 8 weeks 12 weeks	Baseline TIME intervention: 68.5 (95% CI [64.5, 72.5]) Usual care: 70.2 (95% CI [66.5, 74.0]) 8 weeks TIME intervention: 61.5 (95% CI [57.4, 65.7]) Usual care: 68 (95% CI [64.3, 71.8]) Mean difference: 0.23 (p value 0.026) 12 weeks TIME intervention: 59.4 (95% CI [55.2, 63.6]) Usual care: 67.1 (95% CI [63.3, 70.9]) Mean difference: 0.29 (p value 0.006)
Pieper, 2016[83] 12 nursing homes 288 patients randomized Primary outcome: CMAI and NPI	CMAI Lower=better 3 months 6 months	Baseline STA OP! mean: 46 (SD=17.2) Usual care mean: 47.7 (SD=19) Overall adjusted mean difference between the intervention and control baseline to 6 months -3.45 (95% CI [-7.68, 0.78]) (p value 0.05)
Moniz-Cook, 2017[62] 63 care homes 832 patients randomized Primary outcome: NPI	CMAI Lower=better 4 months 7 months	Baseline Staff e-learning mean: 54.61 (SD=20.43) Usual care mean: 53.3 (SD=16.49) Difference in change between baseline to 7-month follow-up between groups with clustering: 0.045
Chenoweth, 2009[84] 15 care sites 289 patients randomized Primary outcome: CMAI	CMAI Lower=better 4 months 8 months	Baseline Person-centered care mean: 47.5 (SD=9.1) Dementia-care mapping mean: 46.1 (SD=6.5) UC mean: 50.3 (SD=6.8) 4-month follow-up Person-centered care mean: 41.7 (SD=9.2)

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
		dementia-care mapping mean: 45.1 (SD=6.6) UC mean: 58.7 (SD=6.9) 8-month follow-up Person-centered care mean: 37.2 (SD=9.1) Dementia-care mapping mean: 43.7 (SD=6.5) UC mean: 57.7 (SD=6.8) Person-centered care vs UC mean difference: 13.6 (95% CI [3.3, 23.9]) (p value 0.01) Dementia-care mapping vs UC mean difference: 10.9 (95% CI [0.7, 21.1]) (p value 0.04) Arm x time p value: 0.005
van de Ven, 2013[48] 14 care homes 268 patients randomized Primary outcome: CMAI	CMAI Lower=better 4 months 8 months	Baseline Dementia care mapping mean: 46.61 (SE=1.91) Usual care mean: 45.29 (SE=1.56) 4 months Dementia care mapping: 47.86 (SE=1.88) Usual care mean: 44.32 (SE=1.63) 8 months Dementia care mapping: 48.18 (SE=2.3) Usual care mean: 45.81 (SE=1.97) Mean difference: 2.4 (95% CI [-2.7, 7.6)] (p value 0.34) Interaction between group and time: p value 0.473
Chenoweth, 2014[82] 38 clusters 601 patients randomized Primary outcome: NR	CMAI Lower=better 6 months 8 months	Baseline Person-centered care mean: 64 (95% CI [56, 72]) Usual care and usual environment: 52 (95% CI [43, 61]) 6 months follow-up Person-centered care mean: 58 (95% CI [49, 67])

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
		Usual care and usual environment mean: 53 (95% CI [43, 63]) 8 months follow-up Person-centered care mean: 46 (95% CI [37, 56]) Usual care and usual environment: 51 (95% CI [41, 62]) Person-centered care vs usual care and usual environment p value: 0.06
Ballard, 2018[40] 69 clusters 832 patients randomized Primary outcome: QOL	CMAI Lower=better 9 months	WHELD (staff training in person-centered care) mean: -4.13 Continuous mean: 0.14 Mean difference (in longitudinal change): -4.27 (SE=1.59) (95% CI [-7.39, -1.15])
Ballard, 2016[81] 16 nursing homes 277 patients randomized Primary outcome: CMAI	CMAI Lower=better 9 months	Baseline Antipsychotic review mean: 46.54 (SD=15.97) No antipsychotic review Baseline mean:47.06 (SD=15.87) 9-month follow-up Antipsychotic review mean: 49.1 (SD=20.14) No antipsychotic review mean: 46.16 (SD=18.17) Antipsychotic review vs no antipsychotic review: 4.6 (95% CI [-1.43, 10.63]) Baseline Social interaction mean: 47.91 (SD=16.74) No Social interaction mean: 45.57 (SD=14.92) 9-month follow-up: Social interaction mean: 50.75 (SD=21.77) No social interaction mean: 44.6 (SD=15.72) Social interaction vs no social interaction: 4.96 (95% CI –1.33, 11.25)

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
Rapp, 2013[49] 18 nursing homes 304 patients randomized Primary outcome: CMAI	CMAI Lower=better 10 months	Training and activity therapy mean: 52.94 (SD=22.97) Treatment as usual mean: 53.86 (SD=16.64) 10 months Training and activity therapy mean: 46.24 (SD=16.27) Treatment as usual mean: 56.38 (SD=17.23) Mean difference: 6.24 (95% CI [2.03, 14.14]) p value (0.009)
Fossey, 2006[55] 12 nursing homes 346 patients randomized Primary outcome: neuroleptic use	CMAI Lower=better 12 months	Baseline Training and staff support mean: 41.6 (SD=7.2) Usual care mean: 42 (SD=5.6) 12-month follow-up Training and staff support vs usual care weighted mean difference: 0.3 (95% CI [-8.3, 8.9])
Zwijsen, 2014[45] 17 dementia special care units 659 patients randomized Primary outcome: CMAI	CMAI Lower=better 20 months	Grip on Challenging Behavior mean T1 (4 months): 47 (SD=18) T2 (8 months): 52 (SD=19) T3 (12 months): 51 (SD=18) T4 (16 months): 50 (SD=17) T5 (20 months): 51 (SD=19) Usual care mean T0 (Baseline): 51 (SD=18) T1 (4 months): 55 (SD=19) T2 (8 months): 53 (SD=20) T3 (12 months): 53 (SD=20) T4 (16 months): 56 (SD=22)
Chapman, 2007[53] 2 nursing homes 118 patients randomized Primary outcome: NR	CMAI-aggressive behavior subscale Lower=better 8 weeks	Baseline AICT mean: 1.18 (SD=0.47) Usual care: 1.23 (SD=0.48) 8 weeks AICT mean: 1.10 (SD=0.25) Usual care: 1.16 (SD=0.39)

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
		F statistic 0.06
	CMAI-physically nonaggressive behavior Lower=better 8 weeks	Baseline AICT mean: 1.64 (SD=1.10) Usual care: 1.36 (SD=0.52) 8 weeks AICT mean: 1.30 (SD=0.60) Usual care: 1.29 (SD=0.49) F statistic: 4.22 (p value ≤ 0.05)
	CMAI- verbally agitated behavior Lower=better 8 weeks	Baseline AICT mean: 1.44 (SD=0.48) Usual care: 1.44 (SD=0.61) 8 weeks AICT mean: 1.28 (SD=0.42) Usual care: 1.36 (SD=0.53) F statistic: 1.43
Moniz-Cook, 2017[62] 63 care homes 832 patients randomized Primary outcome: NPI	CMAI-physical/ aggressive Lower=better 4 months 7 months	Baseline Staff e-learning mean: 17.2 (SD=9.47) Usual care mean: 16.94 (SD=7.79) 7 month mean difference 0.39 (95% CI [-1.77, 2.55])
	CMAI-physical/ nonaggressive Lower=better 4 months 7 months	Baseline Staff e-learning mean: 19.55 (SD=8.93) Usual care mean: 19.29 (SD=8.62) 7 month mean difference: 0.46 (95% CI [-1.66, 2.58])
	CMAI-verbal/ aggressive Lower=better 4 months 7 months	Baseline Staff e-learning mean: 5.68 (SD=3.21) Usual care mean: 5.49 (SD=3.14) 7 month mean difference: 0.60 (95% CI [-0.16, 1.36])
	CMAI-verbal/ nonaggressive	Baseline

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
	Lower=better 4 months 7 months	Staff e-learning mean: 12.13 (SD=6.4) Usual care mean: 11.58 (SD=5.68) 7 month mean difference: 0.63 (95% CI [-1.17, 2.43])
Appelhof, 2019[39] 13 special care units 274 patients randomized Primary outcome: CMAI	CMAI-aggressive Lower=better 9 months	Grip on neuropsychiatric symptoms vs usual care regression coefficient: 0.495 (95% CI [-0.448, 1.438]) (p value 0.303)
	CMAI-verbal Lower=better 9 months	Regression coefficient: -0.176 (95% CI [-1.065, 0.713]) (p value 0.697)
Rokstad, 2013[60] 15 nursing homes 624 patients randomized Primary outcome: BARS	CMAI-agitation Lower=better 11 months	Baseline DCM mean 18.8 (SD=9.2) VPM mean 19.7 (SD=9.8) Control 17.6 (SD=8.4) 11- month follow-up DCM: 17.2 (SD=9) VPM: 18.5 (SD=8.6) Control: 17.8 (SD=8) DCM vs control regression coefficient: -2 (95% CI [-5.1, 1.1]) (p value 0.19) VPM vs control regression coefficient: 1.1 (95% CI [-3.8; 1.6]) (p value 0.42)
Lichtwarck, 2018[42] 33 nursing homes 229 patients Primary outcome: NPI	NPI Lower=better 8 weeks 12 weeks	Baseline TIME mean: 44.2 (95% CI [39.9, 48.0]) Brief education-only intervention mean: 49.0 (95% CI [45.0, 53.0]) 8 weeks TIME mean: 33.7 (95% CI, 29.3, 38.2) Brief education-only intervention: 41.3 (95% CI [37.3, 45.4]) Standard mean difference: 0.12 (p value 0.317) 12 weeks TIME mean: 31.1 (95% CI [26.7, 35.6]) Brief education-only intervention: 41.4 (95% CI [37.3, 45.5])

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
		Standard mean difference: 0.25 (p value 0.053)
Stensvik, 2022[34] 17 nursing home 309 patients randomized Primary outcome: neuropsychiatric symptoms	NPI-Q 12 item scale Lower=better 3 months	Baseline Modified comprehensive geriatric assessment and case conferences mean: 4.5 (SD=5.2) Usual care mean: 4.9 (SD=5.4) 3 months Modified comprehensive geriatric assessment and case conferences mean: 3.9 (SD=3.7) Usual care mean: 5.4 (SD=6) Difference -1 (95% CI [-2.4, 0.5]) (p value 0.19)
Pieper, 2016[106] 12 nursing homes 288 patients randomized Primary outcome: CMAI and NPI	NPI-NH Lower=better 3 months 6 months	Baseline STA OP! mean: 17 (SD=16.4) Usual care mean: 14.3 (SD=12.9) Overall adjusted mean difference: -5.70 (95% CI [-8.88, -2.52]) (p value < 0.001)
Moniz-Cook, 2017[62] 63 care homes 832 patients randomized Primary outcome: NPI	NPI Lower= better 4 months 7 months	Baseline Staff e-learning mean: 20.06 (SD=15.66) Usual care mean: 22.28 (SD=16.22) 7- month follow-up mean difference in score: 0.18 (95% CI [-3.68, 4.04])
Chenoweth, 2009[84] 15 care sites 289 patients randomized Primary outcome: CMAI	NPI Lower=better 4 months 8 months	Baseline Person-centered care mean: 21.3 (SD=9.8) Dementia-care mapping mean: 12.7 (SD=5.1) UC mean: 16.9 (SD=5.3) 4-month follow-up Person-centered care mean: 14.5 (SD=6.9) Dementia-care mapping mean: 16.8 (SD=5.1) UC mean: 20.2 (SD=5.4) 8-month follow-up Person-centered care mean: 12.6 (SD=6.9) Dementia-care mapping mean: 13.5 (SD=5.1) UC mean: 15.3 (SD=5.3)

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
		Arm x time p value: 0.30
van de Ven, 2013[48] 14 care homes 268 patients randomized Primary outcome: CMAI	NPI- NH Lower=better 4 months 8 months	Baseline Dementia care mapping: 5.35 (SD=0.94) Usual care: 6.28 (SD=0.88) 4 months Dementia care mapping: 7.19 (SD=0.95) Usual care: 4.45 (SD=0.88) 8 months Dementia care mapping: 6.28 (SD=0.92) Usual care: 4.45 (SD=0.88) Arm x time interaction P value = 0.022
Ballard, 2016[81] 16 nursing homes 277 patients randomized Primary outcome: CMAI	NPI Lower=better 9 months	Baseline Antipsychotic review mean: 12.52 (SD=13.89) No antipsychotic review Baseline mean: 15.93 (SD=15.96) 9-month follow-up Antipsychotic review mean: 14.62 (SD=13.36) No antipsychotic review mean: 13.05 (SD=11.13) Antipsychotic review vs no antipsychotic review: 7.37 (95% CI [1.53, 13.22]) (p value 0.02) Baseline Social interaction mean: 15.05 (SD=15.51) No social interaction mean: 12.99 (SD=14.25) 9-month follow-up: Social interaction mean: 14.89 (SD=12.35) No social interaction mean: 12.86 (SD=12.43) Social interaction vs no social interaction: 5.45 (95% CI [0.12, 10.77]) (p value <0.05)

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
Rokstad, 2013[60] 15 nursing homes 624 patients randomized Primary outcome: BARS	NPI-Q Lower=better 11 months	Baseline DCM mean: 5.2 (SD=4.7) VPM mean: 6.9 (SD5.1) Control mean: 4.1 (SD=3.9) 11 months DCM mean: 5.3 (SD=5.5) VPM mean: 6.2 (SD=5.6) Control mean: 5.5 (SD=4.5) DCM vs control adj. regression coefficient: -2.7 (95%CI [-4.6, -0.7]) (p value 0.01) VPM vs control adj. regression coefficient: -2.4 (95% CI [-4.1, -0.6]) (p value 0.01)
Zwijsen, 2014[45] 17 dementia special care units 659 patients randomized Primary outcome: CMAI	NPI-NH Lower=better 20 months	Grip on Challenging Behavior mean: T1 (4 months): 1.9 (SD=2.2) T2 (8 months): 2.4 (SD=2.2) T3 (12 months): 2.4 (SD=2.3) T4 (16 months): 2.4 (SD=2.3) T5 (20 months): 2.4 (SD=2.4) Usual care mean: T0 (Baseline): 2.7 (SD=2.2) T1 (4 months): 3.0 (SD=2.5) T2 (8 months): 3.0 (SD=2.5) T3 (12 months): 2.3 (SD=2.3) T4 (16 months): 3.3 (SD=2.8)
Lichtwarck, 201[42] 33 nursing homes 229 patients Primary outcome: NPI	NPI-agitation/aggression Lower=better 8 weeks 12 weeks	Baseline TIME mean: 8.7 (95% CI [8.1, 9.4]) Brief education-only intervention mean: 8.4 (95% CI [7.8, 9.0]) 8 weeks TIME mean: 6.1 (95% CI [5.4, 6.8]) Brief education-only intervention mean: 6.8 (95% CI [6.2, 7.5]) Standardized mean difference: 0.32 (p value 0.031) 12 weeks

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
		TIME mean: 5.7 (95% CI [4.9, 6.4]) Brief education-only intervention mean: 7 (95% CI [6.3, 7.6]) Standardized mean difference: 0.47 (p value 0.002)
Stensvik, 2022[34] 17 nursing home 309 patients randomized Primary outcome: neuropsychiatric symptoms	NPI-affective subscale Lower=better 3 months	Baseline Modified comprehensive geriatric assessment and case conferences mean: 0.7 (SD=1.1) Usual care mean: 1 (SD=1.4) 3 months Modified comprehensive geriatric assessment and case conferences mean: 0.6 (SD=1) Usual care mean: 0.8 (SD=1.4) Difference: 0.05 (95% CI [0.67, -0.2]) (p value 0.67)
	NPI-agitation subscale Lower=better 3 months	Baseline Modified comprehensive geriatric assessment and case conferences mean: 1.4 (SD=1.9) Usual care mean: 1.7 (SD=2.1) 3 months Modified comprehensive geriatric assessment and case conferences mean: 1.5 (SD=2) Usual care mean: 2 (SD=2.5) Difference: -0.2 (95% CI [0.54, -0.8)] (p value 0.54)
Stensvik, 2022[34] 17 nursing home 309 patients randomized Primary outcome: neuropsychiatric symptoms	NPI-apathy Lower=better 3 months	Baseline Modified comprehensive geriatric assessment and case conferences mean: 0.7 (SD=1.1) Comparator mean: 0.6 (SD=1.1) 3 months Modified comprehensive geriatric assessment and case conferences mean: 0.5 (SD=0.8) Comparator mean: 0.9 (SD=1.3) Difference: -0.5 (95% CI [-0.9, -0.05]) (p value 0.03)
	NPI-psychosis Lower=better 3 months	Baseline Modified comprehensive geriatric assessment and case conferences mean: 0.8 (SD=1.2) Usual care mean: 0.8 (SD=1.2)

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
		3 months Modified comprehensive geriatric assessment and case conferences mean: 0.8 (SD=1.2) Usual care mean: 0.9 (SD=1.3) Difference -0.25 (95% CI [-0.5, 0.1]) (p value 0.11)
Appelhof, 2019[39] 13 special care units 274 patients randomized Primary outcome: CMAI	NPI-subscale for agitation/aggression. Lower=better 6 months	Grip on neuropsychiatric symptoms vs usual care Regression coefficient: -0.001 (95% CI [-0.09, 0.087]) (p value 0.975)
Moniz-Cook, 2017[62] 63 care homes 832 patients randomized Primary outcome: NPI	NPI-distress Lower=better 4 months 7 months	Baseline Staff e-learning mean: 4.77 (SD=6.63) Usual care mean: 4.82 (SD=6.5) Mean difference in score: 0.12 (95% CI [-1.64, 1.88])
	NPI-frequency Lower=better 4 months 7 months	Baseline Staff e-learning mean: 12.12 (SD=7.1) Usual care mean: 12.66 (SD=7.5) 7 months Staff e-learning mean: 11.65 (SD=6.92) Usual care mean: 11.65 (SD=6.43) Difference in mean: 0.6 (95% CI [-1.18, 2.38])
	NPI-incidence Lower=better 4 months 7 months	Baseline Staff e-learning mean: 4.86 (SD=2.4) Usual care mean: 4.8 (SD=2.34)
Moniz-Cook, 2017[62] 63 care homes 832 patients randomized Primary outcome: NPI	NPI-Severity Lower=better 7 months	Baseline Staff e-learning mean: 7.55 (SD=4.8) Usual care mean: 7.97 (SD=4.87) 7 months Staff e-learning mean: 7.29 (SD=4.44) Usual care mean: 7.25 (SD=4.45) Difference in mean: 0.45 (95% CI [-1.03, 1.93])

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
van de Ven, 2013[48] 14 care homes 268 patients randomized Primary outcome: CMAI	NPI-agitation subscale Lower=better 4 months 8 months	Baseline Dementia care mapping mean: 0.63 (SD=0.17) Usual care mean: 0.77 (SD=0.16) 4 months Dementia care mapping mean: 0.62 (SD=0.17) Usual care mean: 0.49 (SD=0.16) 8 months Dementia care mapping mean: 0.52 (SD=0.17) Usual care mean: 0.6 (SD=0.16) P value: 0.862
Zwijsen, 2014[45] 17 dementia special care units 659 patients randomized Primary outcome: CMAI	NPI - subscale for agitation Lower=better 20 months	OR 0.82 (95% CI 0.48, 1.39) (p value 0.47)
Kovach, 2006[58] 14 long-term care facilities 127 patients randomized Primary outcome: NR	BEHAVE-Alzheimer's Disease (AD) scale- o used to assess less subtle behavioral symptoms of discomfort, such as aggression and wandering Lower=better 2 weeks 4 weeks	Baseline STI: 7.43 (SD=6.75) Control: 6.80 (SD=5.47) 2 weeks STI: 5.56 (SD=5.64) Control: 6.15 (SD=5.55) 4 weeks STI: 4.68 (SD=4.06) Control: 4.96 (SD=4.39) F statistic: 0.70 (p value 0.5)
Moniz-Cook, 2017[62] 63 care homes 832 patients randomized Primary outcome: NPI	Challenging Behavior Scale difficulty Lower=better 4 months 7 months	Baseline Staff e-learning mean: 11.22 (SD=10.37) Usual care mean: 11.03 (SD=10.59)
	Challenging Behavior Scale frequency	Baseline

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
	Lower=better 4 months 7 months	Staff e-learning mean:21.42 (SD=14.59) Usual care mean: 21.38 (SD=14.87) Mean difference in score: 0.69 (95% CI [-1.67, 3.05])
	Challenging Behavior Scale (frequency × difficulty) Lower=better 4 months 7 months	Baseline Staff e-learning mean: 34.99 (SD=35.16) Usual care mean: 34.64 (SD=35.65) Mean difference in score: -0.19 (95% CI [-6.69, 6.31])
	Challenging Behavior Scale incidence Lower=better 4 months 7 months	Baseline Staff e-learning mean: 7.07 (SD=4.04) Usual care mean: 6.93 (SD=4.55) Chi square 0.116
Kirkham, 2020[37] 10 long term care facilities Primary outcome: Antipsychotic use	Behavioral symptoms Lower=better 12 months	OPAL: 14.9 (SD=1.6) Self at baseline prior to intervention: 14.3 (SD=1.4) 12 months OR: 0.96 (95% CI 0.8, 1.14) (p value 0.6)
Appelhof, 2019[39] 13 special care units 274 patients randomized Primary outcome: CMAI	Antipsychotic use Lower=better 6 months	Grip on neuropsychiatric symptoms vs usual care Regression coefficient: -0.002 (95% CI [-0.064, 0.06]) (p value 0.956)
Pieper, 2016[83] 12 nursing homes 288 patients randomized Primary outcome: CMAI and NPI	Antipsychotic use Lower=better 3 months 6 months	STA OP!: 51/ 144 Usual care: 51/ 138 OR 0.87 (95% CI 0.33, 2.30) (p value 0.78)
Moniz-Cook, 2017[62] 63 care homes 832 patients randomized Primary outcome: NPI	Antipsychotic use Lower=better 7 months	Baseline Staff e-learning: 30/202 Usual care:36/226 7 month follow-up Staff e-learning: 34/202

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
		Usual care: 39/ 226 Chi-square >0.999
Chenoweth, 2009[84] 15 care sites 289 patients randomized Primary outcome: CMAI	Antipsychotic use Lower=better 4 months 8 months	Baseline Person-centered care: 0.42% Dementia-care mapping: 0.15% Usual care: 0.19% 4 months Person-centered care: 0.30% Dementia-care mapping: 0.19% Usual care: 0.14% 8 months Person-centered care: 0.34% Dementia-care mapping: 0.15% UC: 0.14% Baseline to 8 month x person-centered care and dementia-care mapping vs usual care interaction p value: 0.66
Ballard, 2018[40] 69 clusters 832 patients randomized Primary outcome: QOL	Antipsychotic use Lower=better 9 months	Change in use from baseline WHELD (staff training in person-centered care): -0.1% Change in use from baseline treatment as usual: -0.2% Relative risk at 9 months: 1.06 (95% CI [0.62 1.82]) p value 0.82
Ballard, 2016[81] 16 nursing homes 277 patients randomized Primary outcome: CMAI	Antipsychotic use Lower=better 9 months	Antipsychotic review vs no antipsychotic review OR 0.17 (95% CI [0.05, 0.59]) (p value 0.006) Social interaction vs no social interaction OR O.6 (95% CI [0.19, 1.91]) (p value 0.4)
Kirkham, 2020[37] 10 long term care facilities	Antipsychotic use Lower=better 12 months	Baseline weighted mean: 28.6 (SD=1.3) OPAL 12-month follow-up weighted mean: 24.0 (SD=1.5) OR 0.73 (95% CI [0.58, 0.94]) (p value 0.01)

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
Primary outcome: Antipsychotic use		
Zwijsen, 2014[45] 17 dementia special care units 659 patients randomized Primary outcome: CMAI	Antipsychotic use Lower=better 20 months	Intervention T1 (4 months): 23.3% T2 (8 months): 25.9% T3 (12 months): 24.3% T4 (16 months): 23.0% T5 (20 months): 22.6% Control T0 (Baseline): 27.9% T1 (4 months): 28.1% T2 (8 months): 27.4% T3 (12 months): 26.0% T4 (16 months): 20.0%
Appelhof, 2019[39] 13 special care units 274 patients randomized Primary outcome: CMAI	PDU Anxiolytics Lower=better 6 months	Grip on neuropsychiatric symptoms vs usual care regression coefficient: -0.033 (95% CI [-0.095, 0.029]) (p value 0.301)
	PDU Any psychotropic medication Lower=better 6 months	Regression coefficient: -0.023 (95% CI [-0.09, 0.044]) (p value 0.505)
Fossey, 2006[55] 12 nursing homes 346 patients randomized Primary outcome: neuroleptic use	Neuroleptics Lower=better 12 months	Training and staff support vs Usual care weighted mean difference: 19.10% (95% CI [0.50%, 37.70%]) (p value 0.045)
	Psychotropics Lower=better 12 months	Training and staff support vs Usual care weighted mean difference: -5.9 (95% CI [-27.2, 15.5]) (p value 0.56)
Rapp, 2013[49] 18 nursing homes 304 patients randomized	Neuroleptics Lower=better 12 months	Baseline Training and activity therapy: 0.263 (SD=0.052) Treatment as usual: 0.264 (SD=0.091)

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
Primary outcome: CMAI		12 months Training and activity therapy: 0.23 (SD=0.06) Treatment as usual: 0.26 (SD=0.05) Adjusted mean difference: 0.03 (95% CI [0.01, 0.05]) (p value 0.04)
	Cholinesterase inhibitors Lower=better 12 months	Baseline Training and activity therapy: 0.084 (SD=0.022) Treatment as usual : 0.086 (SD=0.024) 12 months Training and activity therapy : 0.19 (SD=0.06) Treatment as usual : 0.08 (SD=0.05) Adjusted mean difference: 0.09 (95% CI [0.05, 0.11]) (p value 0.01)
Zwijsen, 2014[45] 17 dementia special care units 659 patients randomized Primary outcome: CMAI	Anxiolytics Lower=better 20 months	Grip on Challenging Behavior: T1 (4 months): 21.7% T2 (8 months): 17.3% T3 (12 months): 17.6% T4 (16 months): 18.4% T5 (20 months): 21.2% Usual care: T0 (Baseline): 23.5% T1 (4 months): 21.3% T2 (8 months): 25.1% T3 (12 months): 27.6% T4 (16 months): 26.2%
Lichtwarck, 2018[42] 33 nursing homes 229 patients Primary outcome: NPI	Quality of Life in Late-stage Dementia Lower=better 8 weeks 12 weeks	Baseline TIME intervention mean: 28.6 (95% CI [26.7, 30.4]) Brief education-only intervention mean: 29.4 (95% CI [27.6, 31.2]) 8- week follow-up TIME intervention mean: 28.5 (95% CI [26.6, 30.4]) Brief education-only intervention mean: 29 (95% CI [27.2, 30.8]) Standardized mean difference: -0.03 (p value 0.691)

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
		12 week follow-up TIME intervention mean: 27.2 (95% CI [25.3, 29.1]) Brief education-only intervention mean: 29.6 (95% CI [27.8, 31.5]) Standardized mean difference: 0.17 (p value 0.044)
Klapwijk, 2017[102] 12 nursing homes 288 patients Primary outcome: CMAI	QOL- Care Relationship Higher=better 3 months 6 months	Baseline to 3 months STA OP! vs usual care regression coefficient: 0.19 (SE=0.21) (95% CI [-0.22, 0.61]) 3 months to 6 months STA OP! vs usual care regression coefficient: 0.03 (SE=0.22) (95% CI [-0.4, 0.47])
	QOL- Positive Affect Higher=better 3 months 6 months	Baseline to 3 months STA OP! vs usual care regression coefficient: 0.06 (SE=0.31) (95% CI [-0.55, 0.66]) 3 months to 6 months STA OP! vs usual care regression coefficient: -0.21 (SE=0.32) (95% CI [-0.84, 0.43])
	QOL- Negative Affect Higher=better 3 months 6 months	Baseline to 3 months STA OP! vs usual care regression coefficient: 0.27 (SE=0.18) (95% CI [-0.07, 0.62)] 3 months to 6 months STA OP! vs usual care regression coefficient: -0.1 (SE=0.19) (95% CI [-0.47, 0.26])
	QOL- Restless tense behavior Higher=better 3 months 6 months	Baseline to 3 months STA OP! vs usual care regression coefficient: 0.95 (SE=0.3) (95% CI [0.36, 1.54]) 3 months to 6 months STA OP! vs usual care regression coefficient: -0.98 (SE=0.32) (95% CI [-1.6, -0.36])
	QOL- Social relations Higher=better 3 months 6 months	Baseline to 3 months STA OP! vs usual care regression coefficient: 0.45 (SE=0.24) (95% CI [-0.02, 0.91])

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
		3 months to 6 months STA OP! vs usual care regression coefficient: 0.23 (SE=0.25) (95% CI [-0.26, 0.72])
	QOL- Social isolation Higher=better 3 months 6 months	Baseline to 3 months STA OP! vs usual care regression coefficient: 0.01 (SE=0.26) (95% CI [-0.49, 0.51]) 3 months to 6 months STA OP! vs usual care regression coefficient: 0.64 (SE=0.27) (95% CI [0.12, 1.17])
Moniz-Cook, 2017[62] 63 care homes 832 patients randomized Primary outcome: NPI	EQ-5D index Higher=better 4 months 7 months	Staff e-learning vs usual care mean difference in score: 0.08 (95% CI [0.00, 0.16])
	EQ-5D VAS Higher=better 4 months 7 months	Staff e-learning vs usual care mean difference in score: 0.35 (95% CI [-1.58, 1.98])
	QOL-AD Higher=better 4 months 7 months	Staff e-learning vs usual care mean difference in score: 0.2 (95% CI [-1.17, 2.43])
Chenoweth, 2014[82] 38 clusters 601 patients randomized Primary outcome: NR	DEMQOL Higher=better 6 months 8 months	Baseline Person centered care mean: 99 (95% CI [96, 101]) Usual care and usual environment mean: 101 (95% CI [98, 104] 6 month follow-up Person centered care mean: 103 (95% CI [100, 106]) Usual care and usual environment mean: 100 (95% CI [97, 104]) 8-month follow-up Person centered care mean: 106 (95% CI [103, 110]) Usual care and usual environment mean: 103 (95% CI [99, 106]) Person-centered care vs usual care and usual environment p value: 0.17
Chenoweth, 2009[84]	QUALID Lower=better	Baseline Person-centered care: 22.7 (SD=2.2)

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
15 care sites 289 patients randomized Primary outcome: CMAI	4 months 8 months	Dementia-care mapping: 23.5 (SD=1.6) Usual care: 23.2 (SD=1.7) 4-month follow-up Person-centered care: 21.5 (SD=2.2 Dementia-care mapping: 23.4 (SD=1.6) Usual care: 23.7 (SD=1.7) 8-month follow-up Person-centered care: 20.8 (SD=2.2) Dementia-care mapping: 24.5 (SD=1.6) Usual care: 24.4 (SD=1.7) Arm x time interaction p value: 0.33
van de Ven, 2013[48] 14 care homes 268 patients randomized Primary outcome: CMAI	QOL-Qualidem Higher=better 4 months 8 months	Baseline Dementia care mapping: 64.52 (SD=2.06) Usual care: 66.31 (SD=1.71) 4 month follow up Dementia care mapping: 61.88 (SD=2.1) Usual care 63.72 (SD=1.81) 8 month follow up Dementia care mapping: 64.11 (SD=1.88) Usual care 62.45 (SD=2.19) Arm x time interaction p value 0.995
	QOL-EuroQOL Higher=better 4 months 8 months	Baseline Dementia care mapping: 0.39 (SD=0.03) Usual care: 0.44 (SD=0.02) 4 month follow up Dementia care mapping: 0.34 (SD=0.03) Usual care: 0.41 (SD=0.02) 8 month follow up Dementia care mapping: 0.35 (SD=0.03)

Study N clusters N patients Primary outcome	Outcome Direction Follow-Up	Results
		Usual care: 0.36 (SD=0.02) Arm x time interaction p value 0.087
Ballard, 2018[40] 69 clusters 832 patients randomized Primary outcome: QOL	DEMQOL-Proxy Higher=better 9 months	WHELD (staff training in person-centered care) vs treatment as usual mean difference: 2.54 (SE=0.88) (95% CI [0.81, 4.28]) (p value 0.0042)
Rokstad, 2013[60] 15 nursing homes 624 patients randomized Primary outcome: BARS	QUALID Lower=better 11 months	Baseline Dementia care mapping mean: 20.4 (SD=6.8) VPM mean: 21.5 (SD=7) Control mean: 20 (SD=6.6) 11 months Dementia care mapping mean: 21.4 (SD=7.2) VPM mean: 23.1 (SD=7.5) Control mean: 22.8 (SD=7.4) Dementia care mapping vs control regression coefficient: -3 (95% CI [-5.5, -0.6]) (p value 0.02) VPM vs control regression coefficient: -1.3 (95% CI [-3.4, 0.9]) (p value 0.02)
Fossey, 2006[55] 12 nursing homes 346 patients randomized Primary outcome: neuroleptic use	Wellbeing Higher=better 12 months	Training and staff support vs usual care weighted mean difference: -0.2 (95% CI [-0.5, 0.2]) (p value 0.29)

PEER REVIEW COMMENTS AND RESPONSES

Comment #	Reviewer #	Comment	Author Response
Are the objectives, scope, and methods for this review clearly described?			
1	1	Yes	
2	2	Yes	
3	3	Yes	
4	4	No - Objectives and scope are not clear, but methods are. See additional comments	We have addressed relevant comments below.
5	5	Yes	
6	6	Yes	
7	7	Yes	
8	8	Yes	
9	9	Yes	
Is there any indication of bias in our synthesis of the evidence?			
10	1	No	
11	2	No	
12	3	No	
13	4	No	
14	5	No	
15	6	No	
16	7	No	
17	8	No	
18	9	No	
Are there any published or unpublished studies that we may have overlooked?			
19	1	No	
20	2	No	
21	3	Yes - Although patient distress may solely be a manifestation of dementia or a psychiatric	We recognize the significance of trauma as associated with patient distress and acknowledge that past adverse

Comment #	Reviewer #	Comment	Author Response
		condition, it is likely that previous trauma plays a role in distress in many of these patients. Indeed, it is likely that there is a strong interaction between trauma, both military and non-military, and dementia or other psychiatric conditions (besides PTSD) in driving patient distress. There is an extensive body of literature on trauma-informed care and its efficacy. This should be considered in such a review.	life experiences and trauma may interact or exacerbate distress. Based on our review, we did not identify any studies that explored the issue of the role of trauma in distress behaviors as we defined it for purposes of the review. While trauma-informed care literature could be informative, it is beyond the scope of this review. This area could be valuable for future research in improving distress behavior management, which we've noted in our limitations. We have added mention of this in the limitations including acknowledging that in the military population trauma likely interacts with patient distress among older Veterans (Limitations section, third paragraph). In addition, we noted in the future research section (first paragraph) the need to explore interventions incorporating trauma-informed care principles.
22	4	No	
23	5	No	
24	6	Yes - - What was your definition for staff-focused person centered interventions? Many person-centered/focused interventions need staff facilitation. I was wondering how you identified that the staff/team was the primary point of deployment as stated in the review criteria. This would help understand how many interventions were not included (sensory stim, reminiscence). - Also, did you think about including environment centered interventions only in the review? Or no because this is not typically within staff-action? or because this cannot be randomized? - A study regarding STAR-VA impact on psychotropic medications could be mentioned - McConeghy KW, Curyto K, Jedele J, Intrator O, Karel M, Wiechers I. (2021). Impact of the STAR-VA interdisciplinary behavioral intervention program on psychotropic drug utilization in VA community living centers. Journal of	We used the following overarching definition for eligible interventions: “Intervention must be primarily targeted at the health care providers or unit (*eg*, team, clinical service) as the primary point of deployment that involves a change in the way care is delivered.” We acknowledge that some patient focused interventions likely required staff facilitation, but if it was not articulated in the article or was a minor component in the description of the intervention then we did not include it. We identified studies with “patient-centered” interventions based on the labeling used by the study authors. We did not include interventions that focused solely on changes to the environment because they did not meet our eligibility criteria for being “primarily targeted at the health care providers or unit as the primary point of deployment.” We have added references to the McConeghy study in the VA studies section.

Comment #	Reviewer #	Comment	Author Response
		Gerontological Nursing, 42(6), 1522-1540. https://doi.org/10.1016/j.gerinurse.2021.10.009	
25	7	No	
26	8	No	
27	9	No	
Additional suggestions or comments can be provided below.			
28	1	Thank you for this evidence synthesis. The conclusions validated what I suspected would be found - interventions are required at multiple levels, training/implementation must be consistent and interventions must be customized to the patient. I appreciate how difficult this must have been because of the wide variety of measures, outcomes and interventions. We have a start but a long way to go with this research.	You are welcome.
29	2	Please correct my credentials Maureen Haske-Palomino DNP, MSN, GNP-BC	Apologies – we have made this correction.
30	2	Very complicated topic with so many variables. I initially was worried that it would be hard to capture the importance of the environment, interprofessional and person-centered approaches. I think the panel did a great job pulling the evidence together and hitting on those points. I agree so much more work needs to be done to better understand the impact of distressing behaviors on burnout, utilization, and safety.	Thank you.
31	3	Within the document I am listed as “Chief Strategy Officer” in the section titled “Technical Expert Panel”. That is not correct. I am the Chief of the Division of Hospital Medicine.	Apologies – we have made this correction.
32	4	1. In Key Findings, many terms do not stand alone. They are not clear until full report is read. The intervention categories of health care team-	We agree that we need to make clear definitions of the category labels we have used and be consistent throughout. We have added definitions for these categories in the Executive Summary (Current Review

Comment #	Reviewer #	Comment	Author Response
		only, patient-only component, both health care worker and patient focused components are not clear. Most readers will not what these mean and that all of these are under the umbrella of models of health care. The term “patient-only component” is very confusing given all of the interventions are health care deliver models. In addition, need consistency and more definition of this term. Later in report referred to as “patient care patterns” Need to define “health care delivery models” in Key Findings Need to better define setting of interventions in Key Findings. First bullet in Key Findings includes a phrase/term that needs more definition, “..along side structured patient care activities”	section, 4th paragraph) . We have also revised the identified language throughout in need of clarification.
33	4	2. Is there a difference between “health care delivery models” and “staff-focused” interventions ((line 37, pg ix)? In not, “staff-focused” interventions is a much clearer, self-evident term. It they are different, then they each need to be defined and differences highlighted. I like on how page ix, line 31, the interventions are summarized as “interventions centered on staff action (eg, optimal staffing, staffing education/training, staff approaches to improved patient care management). I suggest using this definition and nomenclature rather than “health care deliver models”.	For clarity, we have dropped the phrase “health care delivery models” from the report and stick to using “health care team-focused interventions.” We elected to use the term “health care team” instead of staff to draw a distinction from terms used when discussing the outcomes (*eg*, “staff level”).

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34	4	3. The outcome of interest needs to be better defined and referred to more consistently. Is the outcome of interest? Behavioral and psychological symptoms (line 55, pg viii) Patient distress and associated behaviors ((line 7, pg ix) Distress, or disruptive, behaviors (line 10, pg ix) Distress behaviors (line30, pg ix) Persistent or recurrent distress and/or disrupted behaviors (line 38, pg ix)	We appreciate the need for clarity on the label and definition of the primary outcome of interest. We have now identified “distress behaviors” as the primary outcome and defined it as well as acknowledge that many of the included studies use a variety of labels and language to mean the same behavioral construct (Introduction section, paragraph 5).
35	4	4. None of the terms listed in #3 are clear. It would be more useful to list out specific behaviors that are included and not included. For example, would patients with depressive symptoms along be included? Psychotic symptoms alone? Wandering alone?	As noted above, we have clarified our definition of distress behaviors including naming specific relevant behaviors and then use this term with all identified by our search. Individual studies had a variety of definitions and examples for such behaviors so it would be unwieldly to describe every potential behavior included by each included study. We have also noted this in the limitations.
36	4	5. Need to better define and perhaps list out all of settings that meet criteria for “post acute”. Becomes much clearer on page 6, but should be clear before reader reaches this point (if they ever do).	We have clarified the criteria for “post-acute” as recommended to be: “long-term residential or inpatient health care settings”
37	4	6. Would be much clearer to limit sample to older adults with dementia. The inclusion of persons with serious mental illness and other psychiatric disorders (line 27, pg ix) makes interpreting findings difficult. How many studies were included that did not predominately include persons with dementia? Most persons understand what distressing and disruptive behaviors are when referring to persons with dementia, but this term is much less familiar and clear when use in reference to persons with serious mental illness and other psychiatric disorders. In addition, it is	We purposefully did not limit the sample to studies focused on older adults with dementia on the recommendation of the nominating partners so that we could identify potentially effective interventions from other patient populations. In the end, all the studies for post-acute settings focused primarily on patients with dementia. The definition of older adult was defined as 50 years based on recommendations from our nominating partners and technical expert panel. However, we agree that the diversity across patient populations make conclusions more challenging. We have noted this in the

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		not clear why older adult was defined as 50 years or older. Interpretations are challenging given wide range in age, diagnosis/sx eligibility criteria, intervention components, setting and outcomes.	limitations. We have also included the mean age range of the participants in the evidence profile table.
38	4	7. I do not care for or understand the term “complex older adult” (line 9, pgxiii).	We have dropped the term “complex.”
39	4	8. “just targeting patterns of patient care” (line 41, pg xii) is not a clear term.	This phrase has been rewritten to read: “focused on delivering individual patient care treatments.”
40	4	9. Need to remove term, “dementia patient” across report. Replace with persons or individuals with dementia.	We have replacement this term as recommended.
41	5	Question about title of the report, which we discussed and tweaked several times. Per last communication, the title was "Care for Older Adults with Distress Behaviors: Health Care Team Focused Interventions" which seems to capture a bit better the essence of the review than the current title, "Health Care Delivery Models for the Management of Patient Distress." The current title doesn't get at the key issue of "behaviors" (i.e., distress can include anxiety, depression, fear, grief, etc, that doesn't manifest in distressed/disruptive behaviors that interfere with care, etc. Perhaps "Care for Older Adults with Distress Behaviors: Health Care Delivery Models"?	We have changed the title to “Care for Older Adults with Distress Behaviors: Health Care Team Focused Interventions” as originally discussed. We are avoiding the phrase “health care delivery models” on reviewer recommendations as noted above.
42	5	Perhaps address in methods why we chose not to include Inpatient Medicine setting of care, as many readers may be interested in that context	We did not exclude studies that were conducted in inpatient medicine setting; however, we did not identify any studies otherwise meeting our inclusion criteria that were conducted in the inpatient medicine setting. It is possible that our search terms did not identify relevant studies in that setting. We have adjusted the language throughout to make this clarification and noted this in the limitations.

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43	5	Perhaps a bit more about challenges (and insufficiency...) of research in this area? Limitations section is excellent, including acknowledgement of staff turnover as a real challenge for implementing/studying these interventions. I also wonder about looking only at average scores between groups and/or pre-post. Is there missing information to look at variability of impact, by looking at individual trajectories? How do we understand for which patients interventions appeared to have more positive impact vs for those who did not benefit?	We agree that intervention effects are likely not consistent for all patients and more work is needed to understand how patients with different types of distress behaviors and health histories (*ie*, PTSD) might respond differently to such interventions once effectiveness is established. We have added this consideration to the Future Research Section.
44	5	Did we miss important literature by not including workplace violence or Prevention and Management of Disruptive Behavior (PMDB) studies, targeted at this population? (maybe we did include, or maybe they just don't exist...)	We did not include search terms for workplace violence after discussion with the technical expert panel and with consideration for scope of this review. We agree that there is potentially relevant literature in that area. We have noted this in the limitations. We believe that we would have picked up articles on prevention and management of disruptive behavior if they were in the published literature as we included search terms for “disruptive behavior.”
45	5	Note that I have some minor editing suggestions that I will send directly to Dr. Goldstein via pdf document, rather than try to outline here, which would be cumbersome and not fit within the character count.	Thank you for sharing these suggestions. We have address them directly in the final draft.
46	6	I liked how the review grouped interventions by intervention focus components and multi component interventions. Recommendations: 1) In the objectives behaviors described as challenging or disruptive were the focus - disruptive/challenging to who? How is this different than how distress/distressed behavior is	Thank you. We are glad that this resonated with the reviewer. We appreciate this observation and have changed the language throughout to distress behaviors as noted above in comment # 34.

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		defined? I would recommend defining these terms and using distress behaviors which is more person-centered language, unless a study was making a specific point about level of challenge/disruption and to whom.	
47	6	2) Use person-centered language when possible, such as use person or resident in place of patient, distress behaviors instead of disruptive behaviors, etc.	We have adjusted the language in the report to be patient-centered as recommended.
48	6	3) Clearer language about interventions which all focus on staff-action, and also have multiple labels such as a) person-centered and patient-facing interventions, b) staff-facing, staff-focused, HCW interventions, and c) clinic-facing, unit level, unit focused interventions. It was hard as reader to try to keep track of which we were talking about. - Maybe: a) person centered interventions, b) staff centered interventions, c) person and staff centered interventions, d) person, staff, and environment centered interventions.	We have clarified the intervention language as noted above in response to comment #32.
49	6	4) Be sure you define acronyms the first time they are used (KQ, ROB)	We have reviewed the report to make sure that acronyms were defined with first time use.
50	6	5) I would have also liked to see a table listing the results for person centered/focused interventions and staff/person/environment centered/focused interventions, similar to table 2 for staff centered/focused interventions and table 3 for staff and person centered interventions. Thanks for putting together this important resource.	These tables have been added as requested.
51	7	well done-very thorough	Thank you.

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52	8	• Document page ix, Line 14 (overall page 13): recommend further defining short stay	We have defined short stay as requested.
53	8	• Document page ix, Line 31 (overall page 13): recommend changing “staff action” to “staffing characteristics”	This change has been made as suggested.
54	8	• Document page x, Line 18 (overall page 14): recommend identifying what was used to measure quality of life	We have clarified that the measures used to assess quality of life varied. We prioritized EuroQOL when possible.
55	8	• Document page x, Line 21 (overall page 14): spell out ROB abbreviation	ROB has been spelled out as risk of bias.
56	8	• Document page x, Line 55 (overall page 14): spell out CI abbreviation	We ended up removing this reference due to other edits.
57	8	• Document page xii, Line 58 (overall page 16): After “higher system-level targets (e.g., supervisory involvement, facility culture) could be explored.” Add: “In addition, discipline specific interventions such as the use of Social Workers for intervention and patient-centered care approaches could be explored.”	We have made this addition as recommended.
58	8	• Document page 6, Line 16 (overall page 23): Exclusion "Patients with delirium" - consider adding additional details such as "primary diagnosis of delirium" or "patients with co-occurring delirium" - how was delirium itself controlled for and excluded from this review/study?	We have clarified this exclusion criteria to be “patients with primary diagnosis of delirium.” It is possible that patients included in eligible studies also had delirium, but this was not reported. We only excluded those studies that specifically targeted patients primarily identified to have delirium as the source of their distress behavior.
59	9		