

Appendix A. Search Strategy

Our search strategies by database are outlined below.

Table A-1. MEDLINE®

Search	Queries	Result
#1	Search "dementia"[MeSH Terms] OR "dementia"[All Fields] OR "alzheimer disease"[MeSH Terms] OR "alzheimer"[All Fields] OR "alzheimer disease"[All Fields]	124861
#2	Search #1 Limits: Humans, English	96335
#3	Search "Assisted Living Facilities"[MeSH Terms]	653
#4	Search #2 AND #3	126
#5	Search "Nursing Homes"[MeSH Terms]	28793
#6	Search #2 AND #5	2508
#7	Search "Long-Term Care"[MeSH Terms]	19577
#8	Search #2 AND #7	892
#9	Search "Group Homes"[MeSH Terms]	746
#10	Search #2 AND #9	56
#11	Search "Homes for the Aged"[MeSH Terms]	9773
#12	Search #2 AND #11	1099
#13	Search "Housing for the Elderly"[MeSH Terms]	1336
#14	Search #2 AND #13	72
#15	Search "Institutionalization"[MeSH Terms]	7326
#16	Search #2 AND #15	545
#17	Search "long term care"[tiab]	12016
#18	Search #2 AND #17	862
#19	Search "residential care"[tiab]	1588
#20	Search #2 AND #19	196
#21	Search "institutional care"[tiab]	1252
#22	Search #2 AND #21	142
#23	Search skilled nursing facilit*	3995
#24	Search #2 AND #23	162
#25	Search group home*	1122
#26	Search #2 AND #25	69
#27	Search nursing home*	32683
#28	Search #2 AND #27	3181
#29	Search assist* living	27313
#30	Search #2 AND #29	782
#31	Search "Wellspring"	38
#32	Search #2 AND #31	1
#33	Search Eden alternative*	18
#34	Search #2 AND #33	0
#35	Search green house*	173
#36	Search #2 AND #35	1
#37	Search green home*	7
#38	Search #2 AND #37	0
#39	Search #4 OR #6 OR #8 OR #10 OR #12 OR #14 OR #16 OR #18 OR #20 OR #22 OR #24 OR #26 OR #28 OR #30 OR #32 OR #34 OR #36 OR #38	5250
#40	Search #39 Limits: Editorial, Letter, Addresses, Autobiography, Bibliography, Biography, Case Reports, Comment, Congresses, Consensus Development Conference, Consensus Development Conference, NIH, Dictionary, Directory, Festschrift, In Vitro, Interactive Tutorial, Interview, Lectures, Legal Cases, Legislation, Patient Education Handout, Periodical Index, Portraits, Scientific Integrity Review, Video-Audio Media, Webcasts	477
#41	Search #39 NOT #40	4773
#42	Search #41 Limits: Middle Aged: 45-64 years, Middle Aged + Aged: 45+ years, Aged: 65+ years, 80 and over: 80+ years	4128
#43	Search ((#42) AND "1990/01/01"[Publication Date] : "3000"[Publication Date]) AND "0"[Publication Date] : "3000"[Publication Date] Sort by: Author	3646

Table A-2. Cochrane Database

ID	Search	Hits
#1	"dementia"[MeSH Terms] OR "dementia"[All Fields] OR "alzheimer disease"[MeSH Terms] OR "alzheimer"[All Fields] OR "alzheimer disease"[All Fields]	9351
#2	"Assisted Living Facilities"[MeSH Terms]	38
#3	"Nursing Homes"[MeSH Terms]	1217
#4	"Long-Term Care"[MeSH Terms]	2229
#5	"Group Homes"[MeSH Terms]	64
#6	"Homes for the Aged"[MeSH Terms]	415
#7	"Housing for the Elderly"[MeSH Terms]	34
#8	"Institutionalization"[MeSH Terms]	308
#9	"long term care"[tiab]	2229
#10	"residential care"[tiab]	281
#11	"institutional care"[tiab]	193
#12	skilled nursing facilit*	191
#13	group home*	16569
#14	nursing home*	4813
#15	assist* living	2258
#16	Wellspring	1
#17	Eden alternative*	30
#18	green house*	87
#19	green home*	217
#20	(#2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19)	20704
#21	(#1 AND #20)	1263
#22	(#21), from 1990 to 2011	1220
#23	"Humans"[Mesh]	412650
#24	(#22 AND #23)	921
#25	(#24)	916

Table A-3. CINAHL, AgeLine, PsycINFO

#	Query	Limiters/Expanders	Last Run Via	Results
S29	S27 and S28	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	1890
S28	DE "United States"	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	238126
S27	S25 and S26	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	2786
S26	DE "Older Adults"	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	102053
S25	S4 and S23	Limiters - English Language; Exclude MEDLINE records; Human; Language: English; Publication Year from: 1990-2011; Publication Type: Journal article; Publication Year from: 1990-2011; English; Language: English; Population Group: Human; Exclude Dissertations Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	6791
S24	S4 and S23	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	11975
S23	S5 or S6 or S7 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16 or S17 or S18 or S19 or S20 or S21 or S22	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	94213
S22	green home*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	80
S21	green house*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	87

Table A-3. CINAHL, AgeLine, PsycINFO (continued)

#	Query	Limiters/Expanders	Last Run Via	Results
S20	Eden alternative*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	100
S19	"Wellspring"	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	115
S18	assist* living	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	5359
S17	nursing home*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	4850 7
S16	group home*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	5106
S15	skilled nursing facilit*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	3417
S14	"institutional care"	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	4684
S13	"residential care"	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	1665 9
S12	"long term care"	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	3490 4
S11	"Institutionalization"	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	9680
S10	"Housing for the Elderly"	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text;AgeLine;PsycINFO	2288

Table A-4. EMBASE Database Search

ID	Search	Results
2	'dementia'/exp/mj	119986
3	'alzheimer disease'/exp/mj	60262
4	#2 OR #3	119986
6	'nursing home'/exp/mj OR 'long term care'/exp/mj OR 'residential home'/exp/mj OR 'home for the aged'/exp/mj OR 'institutionalization'/exp/mj OR 'residential care'/exp/mj OR 'institutional care'/exp/mj OR 'skilled nursing facility' OR 'assisted living facility'/exp	60593
7	#4 AND #6	1684
8	#4 AND #6 AND ('article'/it OR 'article in press'/it OR 'conference abstract'/it OR 'conference paper'/it OR 'review'/it)	1514
9	#8 AND [humans]/lim AND [english]/lim AND ([embase]/lim OR [embase classic]/lim) AND [1990-2012]/py	543

Number of records after duplicates removed: 5,589

Appendix B. Excluded Studies

Excluded for Wrong Study Design or Publication Type

- Nursing homes report patients' mental problems. *Health Care Strateg Manage*. 1991 Jan;9(1):23. PMID: 10170650.
- Expanding the role of long-term care. The nursing home and beyond. *Health Prog*. 1992 Jun;73(5):27-33. PMID: 10170988.
- Quality of Life Award. Havenwood-Heritage Heights. Provider. 1995 Sep;21(9):46, 9. PMID: 10172418.
- Costs: measuring the economic burden of Alzheimer's disease care. *J Nurs Adm*. 1997 Jan;27(1):4. PMID: 9006594.
- Nonpharmacologic interventions for the Alzheimer's resident: adapted from a 1999 OPTIMA Awards entry. *Nursing Homes Long Term Care Management*. 2000;49(8):51.
- Nature walk: from aimless wandering to purposeful walking. *Nursing Homes Long Term Care Management*. 2000;49(11):50.
- Winners of the 2003 AMDA Foundation/Pfizer Quality Improvement Awards. *J Am Med Dir Assoc*. 2003 Sep-Oct;4(5):286-8. PMID: 14503538.
- New horizons in mental health care. *Nurs Times*. 2005 Aug 23-29;101(34):49. PMID: 16149707.
- Adventure into Snoezelen therapy. *Nursing Homes Long Term Care Management*. 2005;54(10):64.
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Poor Quality Studies

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Appendix C. Evidence Tables

Abbreviations

ADL	activities of daily life
AFG	Attention-focusing group
ANOVA	analysis of variance
BEHAVE-AD	Behavioral Pathology in Alzheimer's Disease
CAREBA	Care Recipient Behavior Assessment
CI	confidence interval
CMAI	Cohen-Mansfield Agitation Inventory
CMAI-N	Nurse-derived Cohen-Mansfield Agitation Inventory
CMAI-O	Observer-derived Cohen Mansfield Agitation Inventory
CSDD	Cornell Scale for Depression in Dementia
DBS	Dementia Behavior Scale
DBS	Dementia Behavior Scale
Discomfort-DAT	Discomfort – Dementia of the Alzheimer's Type
FAST	Functional Assessment Staging
G	group
GIPB	Geriatric Indices of Positive Behavior
HM	hand Massage
MDS-ADL	Minimum Data Set Activities of Daily Living Scale
MDS-COGS	Minimum Data Set Cognition Scale
MMSE	Mini-Mental State Examination
MOSES	Multidimensional Observation Scale for Elderly Subjects
NA	not applicable
NH	nursing home
NR	not reported
NS	not significant
PGCARS	The Philadelphia Geriatric Center Affect Rating Scale
QOL-AD	Quality of Life scale in Alzheimer's Disease
RC/AL	residential care/assisted living
RCT	randomized controlled trial
SCU	special care unit
SPMSQ	Short Portable Mental Status Questionnaire
STI	Serial Trial Intervention
TS	Tune Sl/ps
vs.	versus

Evidence Table 1. Characteristics of included studies

Author, year Trial name Funding Source	Overall Sample Population Size	Overall Setting Sample Size	Group Sample Sizes	# of Beds	% for Profit	Study Design	Models of Care
Dowling, 2005 ¹ NA Government	46	2	G1: 29 G2: 17	NR	NR	RCT	NH
Fritsch, 2009 ² NA Foundation or non-Profit	NR	20	NR	NR	0%	RCT	SCU in NH
Hickman, 2007 ³ NA Government	66	2	G1: 32 G2: 46 G3: 47 G4: 48	NR	NR	RCT	Geriatric units in a state-operated psychiatric hospital and SCU
Kovach, 2006 ⁴ NA Government	127	14	G1: 57 G2: 57	Average # of beds: 115.2 Ranged from 60-187 per facility	57.14%	RCT	NH
Remington, 2002 ⁵ NA Other	68	4	G1: 17 G2: 17 G3: 17 G4: 17	NR	NR	RCT	NH
Rosswurm, 1990 ⁶ NA Other	30	3	G1: 15 G2: 15	NR	NR	RCT	NH
Sloane, 2004 ⁷ NA Government	73	15	G1: 24 G2: 25 G3: 24	G1: 128.0 G2: 119.6	G1: 80% G2: 80%	RCT	NH
Sloane, 2005 ⁸ Collaborative Studies of Long-Term Care Government	1,252	146	G1: 773 G2: 479 G3: 164 G4: 607 G5: 94 G6: 385	Mean bed size G1: 30 G2: 116	G1: 83% G2: 58%	Prospective Cohort	RC/AL, NH
Sloane, 2008 ⁹ Collaborative Studies of Long-Term Care Other	422	230	G1: 175 G2: 247	NR	NR	Prospective Cohort	RC/AL, NH
Tappen, 1994 ¹⁰ NA Foundation or non-profit	63	1	G1: 21 G2: 21 G3: 21	NR	NR	RCT	NH

Evidence Table 1. Characteristics of included studies (continued)

Author, year Trial name Funding Source	Overall Sample Population Size	Overall Setting Sample Size	Group Sample Sizes	# of Beds	% for Profit	Study Design	Models of Care
Toseland, 1997 ¹¹ NA Government	88	4	G1: 31 G2: 29 G3: 28	464 total beds across all 4 nursing homes	NR	RCT	NH
Whall, 1997 ¹² NA Other	31	5	G1: 15 (2 homes) G2: 16 (3 homes)	NR	NR	Non-randomized controlled trial	NH
Zimmerman, 2005 ¹³ Dementia Care Project Foundation or non-profit	421	45	G1: 48 G2: 101 G3: 135 G4: 137	Mean Overall: 61.8 G1: <16 beds G2: >= 16 beds G3: >= 16 beds G4: NR	Overall: 75.6%	Prospective Cohort	RC/AL, NH

Evidence Table 2. Characteristics of study populations

Author, year	Dementia Severity	Mean Baseline level of Cognitive Impairment	Range Baseline level of Cognitive Impairment	Mean Functional Status	Range of Functional Status	Baseline age - mean	Baseline % female	Baseline % non-white or by minority group
Dowling, 2005 ¹ NA Government	Mild to severe	MMSE Overall: 6.7 G1: NR G2: NR	MMSE Range Overall: 0-23 G1: NR G2: NR	NR	NR	Overall: 84 G1: NR G2: NR	Overall: 78% G1: NR G2: NR	African-American Overall: 13.0% G1: NR G2: NR Hispanic: Overall: 4.4% G1: NR G2: NR Asian Overall: 2.2% G1: NR G2: NR
Fritsch, 2009 ² NA Foundation or non-profit	NR	NR	NR	NR	NR	NR	NR	NR
Hickman, 2007 ³ NA Government	Mild to severe	MDS-COGS Mild to Moderate Men: 34.3% Women: 29.0 % Severe Men: 42.9% Women: 51.6% Very Severe: Men: 22.9% Women: 19.4%	NR	Need assistance Bathing Men: 60% Women: 76.7% Need assistance in locomotion Men: 14.3% Women: 22.6%, Need assistance eating Men: 25.7% Women: 22.6 % Urinary incontinence Men: 51.4%, Women: 29.0%	NR	<65 years Men: 14.3% Women: 3.2% 65-79 years Men: 51.4% Women: 32.3% ≥ 80 Men: 34.3% Women: 64.5%	Overall: 47% G1: NR G2: NR G3: NR G4: NR	Overall: 25.76% G1: NR G2:NR G3: NR G4: NR Overall Men: 25.7%, African American Overall Women: 25.8%, African American

Evidence Table 2. Characteristics of study populations (continued)

Author, year Trial name Funding Source	Dementia Severity	Mean Baseline level of Cognitive Impairment	Range Baseline level of Cognitive Impairment	Mean Functional Status	Range of Functional Status	Baseline age - mean	Baseline % female	Baseline % non- white or by minority group
Kovach, 2006 ⁴ NA Government	Severe	MMSE Overall: 7.81 G1: 7.35 G2: 8.26	NR	FAST function Stage 4 G1:3 G2:2 Stage 5 G1: 1 G2: 0 Stage 6 G1: 33 G2:29 Stage 7 G1: 20 G2: 26	NR	Overall: 86.55 G1: 86.58 G2:86.53	Overall: 75% G1: 73.68% G2:77.19%	NR
Remington, 2002 ⁹ NA Other	Mild to severe	Overall: 4% Mild, 43% moderate, 53% severe G1: NR G2: NR G3: NR G4: NR	NR	NR	NR	Overall: 82.4 G1: NR G2: NR G3: NR G4: NR	Overall: 87% G1: NR G2: NR G3: NR G4: NR	Overall: 6% non- white G1: NR G2: NR G3: NR G4: NR
Rosswurm, 1990 ⁶ NA Other	Mild to severe	MMSE Overall: NR G1: 9.86 G2: 11.1	NR	DBS Overall: NR G1: 26.0 G2: 24.0	NR	Overall: 84 G1: NR G2: NR	Overall: 60% G1: NR G2: NR	Overall: 10% Black G1: NR G2: NR
Sloane, 2004 ⁷ NA Government	Moderate to severe	MDS-COGS Overall: NR G1: 7.7 G2: 6.5 MMSE Overall: NR G1: 2.2 G2: 2.1	NR	ADL Overall: NR G1: 2.9 G2: 2.5	NR	Overall: NR G1:86.0 G2:86.9	Overall: NR G1: 73.9% G2:95.7%	Overall: NR Non-white G1:10.9% G2:13.0%

Evidence Table 2. Characteristics of study populations (continued)

Author, year Trial name Funding Source	Dementia Severity	Mean Baseline level of Cognitive Impairment	Range Baseline level of Cognitive Impairment	Mean Functional Status	Range of Functional Status	Baseline age - mean	Baseline % female	Baseline % non- white or by minority group
Sloane, 2005 ⁸ Collaborative Studies of Long- Term Care Government	Mild to severe	MDS-COGS Overall: NR G1: 5.3 G2: 5.7	NR	MDS-ADL Overall: NR G1: 7.6 G2: 11.9	NR	Overall: NR G1: 84.4 G2: 84.9	Overall: NR G1: 78.1% G2: 76.2%	Overall: NR African American G1: 5.2% G2: 17.8% Other G1: 2.6% G2: 1.5%
Sloane, 2008 ⁹ Collaborative Studies of Long- Term Care Other	NR	NR	NR	NR	NR	NR	NR	NR
Tappen, 1994 ¹⁰ NA Foundation or non- profit	NR	MMSE Overall: 6.4 G1: NR G2: NR	NR	NR	NR	Overall: 84 G1: NR G2: NR	Overall: 75% G1: NR G2: NR	NR
Toseland, 1997 ¹¹ NA Government	NR	SPMSQ Overall: NR G1: 7.43 G2: 7.46 G3: 7.15	NR	Need for ADL assistance Overall: NR G1: 20.41 G2: 21.21 G3: 21.74	NR	Overall: 88 G1: 87.79 G2: 87.29 G3: 87.78	Overall: 75% G1: 86% G2: 69% G2: 68%	Overall: 4.55% African American G1: 6% G2: 3% G3: 4%
Whall, 1997 ¹² NA Other	Severe	NR	NR	NR	NR	NR	Overall: 87.1% G1: NR G2: NR	NR
Zimmerman, 2005 ¹⁵ Dementia Care Project Foundation or non- profit	Mild to severe	MMSE/ MDS-COGS Overall: Mild to moderate: 152 Severe to very severe: 259	NR	MDS-ADL Overall: 0-4 ADLs: 198 5-7 ADLs: 164	NR	Overall: ≥ 85 years: 206	Overall: 79.1%	Overall: Non- white: 8.3% White: 80.3%

Evidence Table 3. Intervention/Exposure components

Author, year	Trial name	Funding Source	Intervention/Exposure Components by Group
Dowling, 2005 ¹		NA Government	G1: Morning bright light exposure (9:30-10:30 a.m., >2,500 lux in gaze direction) G2: Control - Usual indoor light levels (150-200 lux)
Fritsch, 2009 ²		NA Foundation or non-profit	G1: TS storytelling groups, met for 10 weeks. Facilitators handed out a playful theatrical picture to serve as the basis for the story. Facilitators asked open-ended questions about the picture and recorded residents' responses on pads of paper, making it clear that there were no correct answers. Facilitators then wove the responses into a story, periodically reading it back to the participants as it progressed. Staff participated in a 9-week training in order to implement the program. G2: Control Setting – No Intervention
Hickman, 2007 ³		NA Government	G1: Morning bright light (7 a.m.–11 a.m.) G2: Evening bright light (4 p.m.–8 p.m.) G3: All-day bright light (7 a.m.–8 p.m.) G4: Standard light (7 a.m.–8 p.m.)
Kovach, 2006 ⁴		NA Government	G1: Nurses were taught to use STI. STI was developed for comfort assessment and management. Multiple levels of assessment and treatment are used, including both nonpharmacological treatments and analgesics. STI allows a standardized treatment to be customized to the individual's specific need. G2: Control nurses were taught common misconceptions about aging, the physical effects of aging, reversible and irreversible causes of dementia, stages of Alzheimer's disease, and various approaches to treating behaviors and physical conditions associated with dementia.
Remington, 2002 ⁵		NA Other	G1: Calm Music (10-minutes) G2: HM (10 minutes) G3: Calm Music and Hand Massage (ten minutes simultaneously) G4: Control - no intervention
Rosswurm, 1990 ⁶		NA Other	G1: AFG consisting of 1) welcoming and relaxation exercises; 2) perceptual-matching exercises; 3) reinforcement with refreshments. G2: Control group had refreshments and the opportunity for social interaction but no planned program.
Sloane, 2004 ⁷		NA Government	G1: Person-centered showering individualize the experience for the resident by using a wide variety of techniques, such as providing choices, covering with towels to maintain resident warmth, distracting attention (e.g., by providing food), using bathing products recommended by family and staff, using no-rinse soap, and modifying the shower spray. G2: Caregiver uses two bath blankets, two bath towels, a no-rinse soap, and 2 quarts of warm water; keeps the resident covered at all times; and cleanses the body using gentle massage. G3: Showering (without person-centered training) was used as the control.
Sloane, 2005 ⁸	Collaborative Studies of Long-Term Care	Government	G1: Residential Care/Assisted Living G2: NH G3: Special Care Unit with in RC/AL G4: Non-Special Care Unit within RC/AL G5: Special Care Unit within NH G6: Non-Special Care Unit within NH

Evidence Table 3. Intervention/Exposure components (continued)

Author, year Trial name Funding Source	Intervention/Exposure Components by Group
Sloane, 2008 ⁹ Collaborative Studies of Long-Term Care Other	G1: Residential Care/Assisted Living G2: Nursing Home
Tappen, 1994 ¹⁰ NA Foundation or non-profit	G1: Regain function in basic activities of daily living through repeated practice; Group setting 5 days/wk. for 2.5 hrs. per day; G2: Recreationally oriented group activities provided for dementia patients in therapeutically oriented settings; 5 days/wk. for 2.5 hrs. per day G3: No additional treatment; regular nursing care
Toseland, 1997 ¹¹ NA Government	G1: Developed to encourage residents with dementia to continue communicating by using memory fragments and any other aspects of their cognitive, affective, and motoric functioning that remain intact. VT is highly interactive and relatively structured and can include (a) the use of nonthreatening, simple, concrete words; (b) speaking in a clear, low, empathic tone of voice; (c) rephrasing and paraphrasing unclear verbal communications; (d) responding to the meanings explicit and implicit in verbal and nonverbal communications; and (e) mirroring verbal and nonverbal communications. G2: Group leaders conducted one activity each meeting, following a manual that contained 54 activities in the eight categories of music, art, literature and writing, dance/exercise, games/trivia, holiday and event planning, discussion, and other activities. Group leaders were not trained in the use of VT and were not informed about the content of the other group intervention. G3: Participation in regular social and recreational programming offered by each nursing facility
Whall, 1997 ¹² NA Other	G1: Bathed in a shower room with recorded songs of birds, sounds of babbling brooks, and the sounds of other small animals such as ducks, kittens, and chickens. Large bright pictures were coordinated with audio. Offering of foods such as banana pudding and/or soda. G2: Usual Care
Zimmerman, 2005 ¹³ Dementia Care Project Foundation or non-profit	G1: Facilities with < 16 beds G2: Facilities with >= 16 beds, not meeting new-model criteria G3: Facilities with >= 16 beds of the "new-model" type G4: Reference or control G5: Encourage activities ≥ once a day G6: Encourage activities < once a day G7: Use specialized workers (staff fill specialized roles) G8: No use of specialized workers

Evidence Table 4. Health outcomes for people with dementia: cognitive decline, functional decline, and pain

Author, year Trial name Funding Source	Cognitive Decline	Functional Decline	Pain
Dowling, 2005 ¹ NA Government	NR	NR	NR
Fritsch, 2009 ² NA Foundation or non-profit	General Alertness Subscale G1: 1512/1647 G2:1111/1245 G1 vs. G2: 1.028 times greater number of alertness events p<0.05	NR	NR
Hickman, 2007 ³ NA Government	NR	NR	NR
Kovach, 2006 ⁴ NA Government	NR	NR	Discomfort-DAT Baseline G1:162.91 G2:158.39, End Point: G1: 122.17 G2: 197.92 Within Group Mean Change G1: 40.74 G2: -39.53 G1 vs. G2: 95% CI, 43.26 to 113.26 p<0.001 Effect size: 0.89
Remington, 2002 ⁵ NA Other	NR	NR	NR
Rosswurm, 1990 ⁶ NA Other	MMSE Mean Gain Scores G1: 1.33 G2: -0.33 t value = 1.36, NS	DBS Mean Gain Score G1: 0.33 G2: -0.33 t value = 0.32, NS	NR

Evidence Table 4. Health outcomes for people with dementia: cognitive decline, functional decline, and pain (continued)

Author, year Trial name Funding Source	Cognitive Decline	Functional Decline	Pain
Sloane, 2004 ¹ NA Government	NR	NR	Modified Discomfort -DAT Endpoint G1: 1.82 G2: 1.57 G3: 2.14 G1 vs. G2: p=0.001 G2 vs.G3: p<0.001 Change in Modified Discomfort- DAT G1: 0.29 G2: 0.54 G3: -0.02 G1 vs. G3 p<0.001 G2 vs. G3 p=0.001 G1 vs. G2: p=0 .003

Evidence Table 4. Health outcomes for people with dementia: cognitive decline, functional decline, and pain (continued)

Author, year Trial name Funding Source	Cognitive Decline	Functional Decline	Pain
Sloane, 2005 ^o Collaborative Studies of Long-Term Care Government	<p>MDS-COGS Increase in cognitive impairment, Mean Change per 12 months Mild Dementia G1: 0.41 G2: 0.71 p=0.181</p> <p>Moderate or Severe Dementia G1: -0.13 G2: 0.45 p=0.93</p> <p>MDS-COGS Increase in cognitive impairment, Mean Change per 12 months G3: 0.33 G4: 0.30 G3 vs. G4 p=0.943 G5: 0.58 G6: 0.61 G5 vs. G6: p=0.903</p>	<p>MDS-ADL Mean Change in ADL dependency per 12 months, MDS-ADL scale Mild Dementia G1: 4.29 G2: 5.80 p=0.059</p> <p>Moderate or Severe Dementia G1: 0.87 G2: 1.13 p=0.807 MDS-ADL Mean Change in ADL dependency per 12 months, MDS-ADL scale G3: 5.64 G4: 2.91 G3 vs. G4: p=0.029 G5: 3.00 G6: 3.19 G5 vs. G6: p=0.886</p>	<p>Pain, not effectively treated during last month of life, % G1: 10.2 G2: 5.5 p=0.186</p> <p>No Pain, never an issue during the last month of life, % G1: 48.5 G2: 38.7 p=0.249</p>
Sloane, 2008 ^o Collaborative Studies of Long-Term Care Other	NR	NR	NR

Evidence Table 4. Health outcomes for people with dementia: cognitive decline, functional decline, and pain (continued)

Author, year Trial name Funding Source	Cognitive Decline	Functional Decline	Pain
Tappen, 1994 ¹⁰ NA Foundation or non-profit	NR	Physical Self Maintenance Scale Within group mean change G1: -3.33 G2: -0.82 G3: +0.74 G1 vs. G2 and G3, p=0.04 Adjusted Endpoint Means G1: 26.17 G2: 24.10 G3: 22.63 G1 vs. G3, p=0.01 G2 vs. G1 or G3, p=NS Performance Test of ADL Within group mean change G1: -3.01 G2: -0.86 G3: +1.14 p=0.12 Physical Self Maintenance Scale Goal Attainment Endpoint Mean G1: 1.75 G2: 1.43 G3: 1.10 G1 vs. G2 vs. G3, p=0.0023 G1 vs. G3, p=0.05 G2 vs. G1 or G3, p=NS	NR

Evidence Table 4. Health outcomes for people with dementia: cognitive decline, functional decline, and pain (continued)

Author, year Trial name Funding Source	Cognitive Decline	Functional Decline	Pain
Toseland, 1997 ¹¹ NA Government	NR	MOSES Self-care Subscale at baseline G1: 16.54 G2: 16.09 G3: 15.70 MOSES Self-care Subscale at endpoint G1: 16.52 G2: 16.68 G3: 16.77 MOSES Self-care Subscale change at endpoint G1: 0.02 G2: -0.59 G3: -1.07 MOSES Disorientation Subscale at Baseline G1: 15.68, G2: 16.09 G3: 17.91 MOSES Disorientation Subscale at Endpoint G1: 17.90 G2: 17.43 G3: 17.09	NR
Whall, 1997 ¹² NA Other	NR	NR	NR
Zimmerman, 2005 ¹³ Dementia Care Project Foundation or non-profit	NR	NR	NR

Evidence Table 5. Health outcomes for people with dementia: sleep quality and depression

Author, year Trial name Funding Source	Sleep Quality	Symptoms of Depression
Dowling, 2005 ¹ NA Government	<p>Proportion of night asleep, % End point Mean G1: 66.64 G2: 71.14</p> <p>Within Group Mean Change G1: -3.62 G2: -4.26 p=NR, ANOVA non-significant</p> <p>Sleep Time (hours:minutes) End point Mean G1: 7:59 G2: 8.32</p> <p>Within Group Mean Change G1: -0:26 G2: -0:31 p=NR, ANOVA non-significant</p> <p>Night wake time (hours:minutes) End Point Mean G1: 3:59 G2: 3.27</p> <p>Within Group Mean Change G1:+0:66 G2: +0:31 p=NR, ANOVA non-significant</p> <p>Number of awakenings End point Mean G1: 42.88 G2: 37.99</p> <p>Within Group Mean Change G1: -1.32 G2 : -3.11 p=NR, ANOVA non-significant</p>	NR

Evidence Table 5. Health outcomes for people with dementia: sleep quality and depression (continued)

Author, year Trial name Funding Source	Sleep Quality	Symptoms of Depression
Dowling, 2005 ¹ (continued)	Day wake time (hours:minutes) End point mean: G1: 6.24 G2: 6.34 Within Group Mean Change: G1: +0.12 G2: +0.87 p=NR, ANOVA non-significant	
Fritsch, 2009 ² NA Foundation or non-profit	NR	NR
Hickman, 2007 ³ NA Government	NR	CSDD Subanalyses bymen G1 vs. G3: 2.62, p=0.007 G2 vs. G3: 1.13, p=0.23 G4 vs. G3: 1.64, p=0.08 G1 vs. G4: 1.50, p=0.16 G1 vs. G4: 0.98, p=0.33 G2 vs. G4: 0.52, p=0.60 Subanalyses bywomen G1 vs. G3: -1.61, p=0.09 G2 vs. G3: 0.09, p=0.94 G4 vs. G3: 1.41, p=0.16 G1 vs. G2: -1.70, p=0.08 G1 vs. G4: -3.02, p=0.01 G2 vs. G4: -1.32, p=0.24
Kovach, 2006 ⁴ NA Government	NR	NR
Remington, 2002 ⁵ NA Other	NR	NR
Rosswurm, 1990 ⁶ NA Other	NR	NR
Sloane, 2004 ⁷ NA Government	NR	NR

Evidence Table 5. Health outcomes for people with dementia: sleep quality and depression (continued)

Author, year Trial name Funding Source	Sleep Quality	Symptoms of Depression
Sloane, 2005 ⁸ Collaborative Studies of Long-Term Care Government	NR	CSDD, Increase in depressive symptoms Mild Dementia G1: 1.33 G2: 1.53 p=0.753 Moderate or Severe Dementia G1: 1.52 G2: 0.85 p=0.409 CSDD, Increase in depressive symptoms G3: 1.59 G4: 1.32 G3 vs. G4: p=0.823 G5: 0.89 G6: 1.25 G5 vs. G6: p=0.630
Sloane, 2008 ⁹ Collaborative Studies of Long-Term Care Other	NR	NR
Tappen, 1994 ¹⁰ NA Foundation or non-profit	NR	NR
Toseland, 1997 ¹¹ NA Government	NR	MOSES Subscale at baseline G1: 10.64 G2: 7.73 G3: 8.78 MOSES Subscale at endpoint G1: 9.19 G2: 10.29 G3: 8.18 MOSES Subscale change at endpoint G1: 1.45 G2: -2.56 G3: 0.6 p=NR, stated difference NS

Evidence Table 5. Health outcomes for people with dementia: sleep quality and depression (continued)

Author, year		
Trial name		
Funding Source	Sleep Quality	Symptoms of Depression
Whall, 1997 ¹²	NR	NR
NA Other		
Zimmerman, 2005 ¹³	NR	NR
Dementia Care Project Foundation or non-profit		

Evidence Table 6. Health outcomes for people with dementia: morbidity, mortality, hospitalizations, and falls

Author, year Trial name Funding Source	Morbidity	Mortality	Hospitalizations	Falls
Dowling, 2005 ¹ NA Government	NR	NR	NR	NR
Fritsch, 2009 ² NA Foundation or non-profit	NR	NR	NR	NR
Hickman, 2007 ³ NA Government	NR	NR	NR	NR
Kovach, 2006 ⁴ NA Government	NR	NR	NR	NR
Remington, 2002 ⁵ NA Other	NR	NR	NR	NR
Rosswurm, 1990 ⁶ NA Other	NR	NR	NR	NR
Sloane, 2004 ⁷ NA Government	Hardy Skin Condition Data Form Baseline: 2.97 Endpoint G1: 2.61 G2: 2.48 Mean Debris Score Baseline: 1.46 Endpoint G1: 0.75 G2: 0.49 Baseline vs. G1, p=0.001 Baseline vs. G2, p=0.003 G1 vs. G2 change: 0.56, NS Baseline vs. G1, p<0.001 Baseline vs. G2, p<0.001 G1 vs. G2 change p=0.08	NR	NR	NR

Evidence Table 6. Health outcomes for people with dementia: morbidity, mortality, hospitalizations, and falls (continued)

Author, year Trial name Funding Source	Morbidity	Mortality	Hospitalizations	Falls
Sloane, 2005 ^o Collaborative Studies of Long- Term Care Government	New or worsening morbidity (Incidence rate per 100 participants per quarter) Mild Dementia G1: 23.5 G2: 21.8 p=0.574 Moderate or Severe Dementia G1: 21.1 G2: 21.7 p=0.865 New or worsening morbidity, incidence rate per 100 participants per quarter G3: 26.7 G4: 25.3 G3 vs. G4: p=0.772 G5: 15.0 G6: 22.0 G5 vs. G6: p=0.043	Mortality (Incidence rate per 100 participants per quarter) Mild Dementia G1: 3.2 G2: 4.2 p=0.409 Moderate or Severe Dementia G1: 3.7 G2: 4.2 p=0.682 Mortality (Incidence rate per 100 participants per quarter) G3: 7.0 G4: 4.0 G3 vs. G4: p=0.116 G5: 3.4 G6: 4.0 G5 vs. G6: p=0.540	Hospitalization (Incidence rate per 100 participants per quarter) Mild Dementia G1: 14.2 G2: 8.4 p=0.009 Moderate or Severe Dementia G1: 14.2 G2: 10.0 p=0.115 Hospitalization (Incidence rate per 100 participants per quarter) G3: 17.3 G4: 14.4 G3 vs. G4: p=0.430 G5: 3.9 G6: 9.6 G3 vs. G4: p=0.006	NR

Evidence Table 6. Health outcomes for people with dementia: morbidity, mortality, hospitalizations, and falls (continued)

Author, year Trial name Funding Source	Morbidity	Mortality	Hospitalizations	Falls
Sloane, 2008 ⁹ Collaborative Studies of Long- Term Care Other	Stable Health during last months of life G1: 12.6% G2: 8.1% p=0.136 Steady decline in health during last months of life G1: 53.4% G2: 71.7% p=NR Series of up's and downs in health during last months of life G1: 33.9% G2: 20.2% p<0.001 One or more skin ulcers during last months of life G1: 26.9% G2: 22.6% p=0.566	NR	Life-sustaining interventions during the last month of life Hospitalized G1: 39.7% G2: 23.6% p=0.149	NR
Tappen, 1994 ¹⁰ NA Foundation or non-profit	NR	NR	NR	NR
Toseland, 1997 ¹¹ NA Government	NR	NR	NR	NR
Whall, 1997 ¹² NA Other	NR	NR	NR	NR
Zimmerman, 2005 ¹³ Dementia Care Project Foundation or non-profit	NR	NR	NR	NR

Evidence Table 7. Psychosocial outcomes for people with dementia: anxiety, affect, quality of life, use of psychoactive medications, use of restraints, and behavior

Author, year Trial name Funding Source	Anxiety	Affect	Quality of Life	Use of Psychoactive Medications	Use of Restraints	Behavior
Dowling, 2005 ¹ NA Government	NR	NR	NR	NR	NR	NR
Fritsch, 2009 ² NA Foundation or non-profit	PGCARS Anxiety Subscale G1: 39/1647 G2: 11/1245 2.68 times more anxiety events for G1 p=<0.002	PGCARS Anger Subscale G1: 6/1647 G2: 1/1245 4.54 times more anger events for G1 p<0.124 PGCARS Sadness Subscale G1: 7/1647 G2: 0/1245 >7 times more sadness events for G1 p<0.021 PGCARS Other (Neutral Affect) G1: 30/1647 G2: 75/1245 p=0.001	NR	NR	NR	Challenging behavior G1: 9/1651 G2: 1/1250 6.80 times more challenged for G1 p=0.034
Hickman, 2007 ³ NA Government	NR	NR	NR	NR	NR	NR

Evidence Table 7. Psychosocial outcomes for people with dementia: anxiety, affect, quality of life, use of psychoactive medications, use of restraints, and behavior (continued)

Author, year Trial name Funding Source	Anxiety	Affect	Quality of Life	Use of Psychoactive Medications	Use of Restraints	Behavior
Kovach, 2006 ⁴ NA Government	NR	NR	NR	NR	NR	BEHAVE-AD Baseline G1: 7.43 G2: 6.80 Endpoint G1: 4.68 G2: 4.96 Within Group Mean Change G1: 2.75 G2: 1.84 p=0.50, measuring the Time X Group interaction Return of behavior to baseline G1: 40 (70%) G2: 23 (40%) p=0 .002
Remington, 2002 ⁵ NA Other	NR	NR	NR	NR	NR	NR
Rosswurm, 1990 ⁵ NA Other	NR	NR	NR	NR	NR	NR
Sloane, 2004 ⁷ NA Government	NR	NR	NR	NR	NR	NR
Sloane, 2005 ⁸ Collaborative Studies of Long-Term Care Government	NR	NR	NR	NR	NR	NR

Evidence Table 7. Psychosocial outcomes for people with dementia: anxiety, affect, quality of life, use of psychoactive medications, use of restraints, and behavior (continued)

Author, year Trial name Funding Source	Anxiety	Affect	Quality of Life	Use of Psychoactive Medications	Use of Restraints	Behavior
Sloane, 2008 ⁹ Collaborative Studies of Long- Term Care Other	NR	NR		Sedative Used Frequently G1: 21.0% G2: 29.2% p=0.592 Sedative Used At Least Sometimes G1: 29.9% G2: 37.3% p=0.792	Any Restraints Used G1: 65.7% G2: 91.5% p<0.001 Any Restraints Other than partial bed rails used G1: 46.3% G2: 67.6% p=0.031	NR
Tappen, 1994 ¹⁰ NA Foundation or non- profit	NR	NR	NR	NR	NR	NR
Toseland, 1997 ¹¹ NA Government	NR	MOSES Irritation Subscale Baseline G1: 5.36 G2: 5.64 Endpoint G1: 4.81 G2: 6.10 G3: 5.36 No effect by Condition X Time	NR	No significant differences among residents in the three intervention conditions with regard to use of antipsychotic, antianxiety, or antidepressant medications.	No changes in frequency of restraint use among residents in the three intervention conditions.	GIPB - no significant changes in Positive social interactions with family, staff, or other residents
Whall, 1997 ¹² NA Other	NR	NR	NR	NR	NR	NR

Evidence Table 7. Psychosocial outcomes for people with dementia: anxiety, affect, quality of life, use of psychoactive medications, use of restraints, and behavior (continued)

Author, year Trial name Funding Source	Anxiety	Affect	Quality of Life	Use of Psychoactive Medications	Use of Restraints	Behavior
Zimmerman, 2005 ¹³ Dementia Care Project Foundation or non-profit	NR	NR	QOL-AD Adjusted Change G1: +0.54 G2: +0.48 G3: -0.38 G4: -0.18 p=0.206 G5: -1.9 G6: -2.6 p=0.043 G7: -1.3 G8: -3.0 p=0.036	NR	NR	NR

Evidence Table 8. Psychosocial outcomes for people with dementia: activity engagement, social engagement, agitation, satisfaction, wandering

Author, year Trial name Funding Source	Activity Engagement	Social Engagement	Agitation	Satisfaction	Wandering
Dowling, 2005 ¹ NA Government	NR	NR	NR	NR	NR
Fritsch, 2009 ² NA Foundation or non-profit	NR	Disengaged G1: 68/1651 G2:107/1250 0.481 times less disengaged for G1 p<0.001 Nonsocial engagement G1: 174/1651 G2:135/1250 0.976 times less nonsocial engagement for the G1 p=0.822 Engagement G1: 1400/1651 G2:1007/1250 1.053 times more engaged for G1 p=0.003	NR	NR	NR
Hickman, 2007 ³ NA Government	NR	NR	NR	NR	NR
Kovach, 2006 ⁴ NA Government	NR	NR	NR	NR	NR

Evidence Table 8. Psychosocial outcomes for people with dementia: activity engagement, social engagement, agitation, satisfaction, wandering (continued)

Author, year Trial name Funding Source	Activity Engagement	Social Engagement	Agitation	Satisfaction	Wandering
Remington, 2002 ⁵ NA Other	NR	NR	<p>CMAI, Mean Baseline G1: 18.41 G2: 16.47 G3: 22.00 G4: 21.76</p> <p>Endpoint G1 : 4.65 G2: 3.06 G3: 3.76 G4: 20.47</p> <p>Within Group Reduction in Score G1:13.76 G2: 13.41 G3: 18.24 G4: 1.29</p> <p>Significant difference found in level of agitation among four groups in repeated measures analysis of variance, p<0.01</p> <p>Significant difference found between groups on physically nonaggressive behaviors, p<0.01</p>	NR	NR
Rosswurm, 1990 ⁶ NA Other	NR	NR	NR	NR	NR

Evidence Table 8. Psychosocial outcomes for people with dementia: activity engagement, social engagement, agitation, satisfaction, wandering (continued)

Author, year Trial name Funding Source	Activity Engagement	Social Engagement	Agitation	Satisfaction	Wandering
Sloane, 2004 ⁷ NA Government	NR	NR	CAREBA Endpoint G1: 25.84 G2: vs..51 G3: 35.65 G1 vs. G3 p=0.02 G2 vs. G3 p=0.01 G1 vs. G2 Change from Baseline, p=0.43	NR	NR
Sloane, 2005 ⁸ Collaborative Studies of Long-Term Care Government	Decrease in Social Function (Adjusted Rates) G1: 1.55 G2: 1.76 p=0.568 Moderate or Severe Dementia G1: 0.91 G2: 1.44 p=0.110 Decrease in Social Function (Adjusted Rates) G3: 1.58 G4: 1.34 p=0.681 G5: 1.88 G6: 1.46 p=0.303	MOSES subscale; Increased withdrawal from activities (Adjusted Rates) Mild Dementia G1: 2.84 G2: 2.24 p=0.364 Moderate or Severe Dementia G1: 2.55 G2: 1.78 p=0.307 MOSES subscale; Increased withdrawal from activities (Adjusted Rates) G3: 3.48 G4: 2.58 p=0.409 G5: 2.22 G6: 1.77 p=0.604	CMAI, Increase in Behavior Problems (Adjusted Rates) Mild Dementia G1: 1.08 G2: 0.69 p=0.604 Moderate or Severe Dementia G1: 1.72 G2: 1.49 p=0.809 CMAI, Increase in Behavior Problems (Adjusted Rates) G3: -1.53 G4: -1.14 p=0.763 G5: -2.18 G6: -0.72 p=0.168	NR	NR

Evidence Table 8. Psychosocial outcomes for people with dementia: activity engagement, social engagement, agitation, satisfaction, wandering (continued)

Author, year Trial name Funding Source	Activity Engagement	Social Engagement	Agitation	Satisfaction	Wandering
Sloane, 2008 ⁹ Collaborative Studies of Long-Term Care Other	NR	NR	NR	NR	NR
Tappen, 1994 ¹⁰ NA Foundation or non-profit	NR	NR	NR	NR	NR

Evidence Table 8. Psychosocial outcomes for people with dementia: activity engagement, social engagement, agitation, satisfaction, wandering (continued)

Author, year Trial name Funding Source	Activity Engagement	Social Engagement	Agitation	Satisfaction	Wandering
Toseland, 1997 ¹¹ NA Government	NR	MOSES Withdrawal Subscale Baseline G1: 14.05 G2:13.05 G3:14.43 Endpoint G1: 13.95 G2: 13.67 G3: 14.91 No effect by Condition X Time	CMAI-N Physically Aggressive Behavior $\chi^2=14.90$ $p=0.001$ G1 vs. G2 and G3 showed significant reduction in Physically aggressive behaviors Verbally Aggressive Behavior – $\chi^2=5.88$ $p=0.053$ G1 and G2 vs. G3 showed significant reduction in verbally aggressive behaviors Physically Nonaggressive Behaviors – $\chi^2=6.76$ $p=0.034$ G2 and G3 reduced CMAI-O Physically Aggressive Behavior $\chi^2=1.41$ $p=0.590$	NR	NR

Evidence Table 8. Psychosocial outcomes for people with dementia: activity engagement, social engagement, agitation, satisfaction, wandering (continued)

Author, year Trial name Funding Source	Activity Engagement	Social Engagement	Agitation	Satisfaction	Wandering
Toseland, 1997 ¹¹ (continued)			Verbally Aggressive Behavior – $\chi^2=12.46$ $p=0.002$ G2 vs. G1 and G3 showed significantly lower scores in verbally aggressive behaviors Physically Nonaggressive Behaviors $\chi^2=1.52$ $p=0.47$		
Whall, 1997 ¹² NA Other	NR	NR	CMAI Agitation T-test of mean difference scores Mean Baseline to T2 - 6.73; $t=3.13$, $p<0.004$ Mean Baseline to T1 - 5.08; $p<0.02$ Aggression (7-items from CMAI) T-test of mean difference scores Mean Baseline to T2 $t=-1.47$; $p<0.19$	NR	NR
Zimmerman, 2005 ¹³ Dementia Care Project Foundation or non-profit	NR	NR	NR	NR	NR

Evidence Table 9. Psychosocial outcomes for people with dementia: autonomy, choice, control, pleasure, quality of dying, spiritual well-being

Author, year Trial name Funding Source	Autonomy	Choice	Control	Pleasure	Quality of Dying	Spiritual Well-being
Dowling, 2005 ¹ NA Government	NR	NR	NR	NR	NR	NR
Fritsch, 2009 ² NA Foundation or non-profit	NR	NR	NR	PGCARS Pleasure Subscale G1: 54/1647 G2: 47/1245 0.869 times less pleasure for G1 p<0.472	NR	NR
Hickman, 2007 ³ NA Government	NA	NA	NA	NA	NA	NA
Kovach, 2006 ⁴ NA Government	NR	NR	NR	NR	NR	NR
Remington, 2002 ⁵ NA Other	NR	NR	NR	NR	NR	NR
Rosswurm, 1990 ⁶ NA Other	NR	NR	NR	NR	NR	NR
Sloane, 2004 ⁷ NA Government	NR	NR	NR	NR	NR	NR
Sloane, 2005 ⁸ Collaborative Studies of Long-Term Care Government	NR	NR	NR	NR	NR	NR

Evidence Table 9. Psychosocial outcomes for people with dementia: autonomy, choice, control, pleasure, quality of dying, spiritual well-being

Author, year Trial name Funding Source	Autonomy	Choice	Control	Pleasure	Quality of Dying	Spiritual Well-being
Sloane, 2008 ⁹ Collaborative Studies of Long-Term Care Other	NR	NR	NR	NR	Psychosocial status during last month of life Resident Appeared to be at peace G1: 70.1% G2: 64.2% p=0.304 Received a compassionate touch daily G1: 96.6% G2: 95.1% p=0.399 Dignity Maintained G1: 90.2% G2: 89.4% p=0.847 At least one staff had close attachment to resident G1: 82.8% G2: 72.1% p=0.528	NR
Tappen, 1994 ¹⁰ NA Foundation or non-profit	NR	NR	NR	NR	NR	NR
Toseland, 1997 ¹¹ NA Government	NR	NR	NR	NR	NR	NR
Whall, 1997 ¹² NA Other	NR	NR	NR	NR	NR	NR
Zimmerman, 2005 ¹³ Dementia Care Project Foundation or non-profit	NR	NR	NR	NR	NR	NR

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Appendix D. Quality Assessment

This appendix describes the criteria relating to internal validity and the procedures that topic teams follow for all updates and new assessments in making these judgments.

All topic teams use initial “filters” to select studies for review that deal most directly with the question at issue and that are applicable to the population at issue. Thus, studies of any design that use outdated technology or that use technology that is not feasible for long-term residential care may be filtered out before the abstraction stage, depending on the topic and the decisions of the topic team. The teams justify such exclusion decisions if there could be reasonable disagreement about this step. The criteria below are meant for those studies that pass this initial filter.

Presented below are a set of minimal criteria for each study design and then a general definition of three categories: “good,” “fair,” and “poor,” based on those criteria. These specifications are not meant to be rigid rules but rather are intended to be general guidelines, and individual exceptions, when explicitly explained and justified, can be made. In general, a “good” study is one that meets all criteria well. A “fair” study is one that does not meet (or it is not clear that it meets) at least one criterion but has no known “fatal flaw.” “Poor” studies have at least one fatal flaw.

Systematic Reviews

Criteria:

- Comprehensiveness of sources considered/search strategy used
- Standard appraisal of included studies
- Validity of conclusions
- Recency and relevance are especially important for systematic reviews

Definition of Ratings From Above Criteria:

Good: Recent, relevant review with comprehensive sources and search strategies; explicit and relevant selection criteria; standard appraisal of included studies; and valid conclusions.

Fair: Recent, relevant review that is not clearly biased but lacks comprehensive sources and search strategies.

Poor: Outdated, irrelevant, or biased review without systematic search for studies, explicit selection criteria, or standard appraisal of studies.

Case-Control Studies

Criteria:

- Accurate ascertainment of cases
- Nonbiased selection of cases/controls with exclusion criteria applied equally to both
- Response rate
- Diagnostic testing procedures applied equally to each group
- Measurement of exposure accurate and applied equally to each group
- Appropriate attention to potential confounding variables

Definition of Ratings Based on Criteria Above:

Good: Appropriate ascertainment of cases and nonbiased selection of case and control participants; exclusion criteria applied equally to cases and controls; response rate equal to or greater than 80 percent; diagnostic procedures and measurements accurate and applied equally to cases and controls; and appropriate attention to confounding variables.

Fair: Recent, relevant, without major apparent selection or diagnostic work-up bias but with response rate less than 80 percent or attention to some but not all important confounding variables.

Poor: Major selection or diagnostic work-up biases, response rates less than 50 percent, or inattention to confounding variables.

Randomized Controlled Trials and Cohort Studies

Criteria:

- Initial assembly of comparable groups: for RCTs: adequate randomization, including first concealment and whether potential confounders were distributed equally among groups; for cohort studies: consideration of potential confounders with either restriction or measurement for adjustment in the analysis; consideration of inception cohorts
- Maintenance of comparable groups (includes attrition, cross-overs, adherence, contamination)
- Important differential loss to follow-up or overall high loss to follow-up
- Measurements: equal, reliable, and valid (includes masking of outcome assessment)
- Clear definition of interventions
- All important outcomes considered
- Analysis: adjustment for potential confounders for cohort studies, or intention to treat analysis for RCTs.

Definition of Ratings Based on Above Criteria:

Good: Meets all criteria: Comparable groups are assembled initially and maintained throughout the study (follow-up at least 80 percent); reliable and valid measurement instruments are used and applied equally to the groups; interventions are spelled out clearly; all important outcomes are considered; and appropriate attention to confounders in analysis. In addition, for RCTs, intention to treat analysis is used.

Fair: Studies will be graded “fair” if any or all of the following problems occur, without the fatal flaws noted in the “poor” category below: Generally comparable groups are assembled initially but some question remains whether some (although not major) differences occurred with follow-up; measurement instruments are acceptable (although not the best) and generally applied equally; some but not all important outcomes are considered; and some but not all potential confounders are accounted for. Intention to treat analysis is done for RCTs.

Poor: Studies will be graded “poor” if any of the following fatal flaws exists: Groups assembled initially are not close to being comparable or maintained throughout the study; unreliable or invalid measurement instruments are used or not applied at all equally among groups (including not masking outcome assessment); and key confounders are given little or no attention. For RCTs, intention to treat analysis is lacking.

Criteria for Assessing External Validity (Generalizability) of Individual Studies

Each study that is identified as one that provides evidence to answer a KQ is assessed by according to its external validity (generalizability) using the following criteria.

Study Population:

The degree to which the people who were involved as subjects in the study constitute a special population because they were selected from a larger eligible population or were for other reasons unrepresentative of people who are likely to seek or be candidates for the preventive service. The selection has the potential to affect the following:

- absolute risk: The background rate of outcomes in the study could be greater or less than what might be expected in asymptomatic people because of the inclusion/exclusion criteria, because of non-participation, or for other reasons.
- harms: The harms observed in the study could be greater or less than what might be expected in asymptomatic people.

The following are features of the study population and the study design that may cause experience in the study to be different from what would be observed in the US long-term residential care population:

- demographics (age, gender, ethnicity, education, income): The criteria for inclusion/exclusion or non-participation do not encompass the range of people likely to be candidates for the preventive services in the US long-term residential care population.
- co-morbidities: the frequency of co-morbid conditions in the study population does not represent of the frequency likely to be encountered in people who seek the preventive service in the U.S. long-term residential care population.
- special inclusion/exclusion criteria: There are other special inclusion/exclusion criteria that make the study population unrepresentative.
- refusal rate (ratio of included to not-included but eligible participants): The refusal rate among eligible study subjects is high, making the enrollees in the study unrepresentative even of the people eligible for the study.
- adherence (run-in phase, frequent contact to monitor adherence): The design of the study has features that may make the effect of the intervention in the study greater than it would be in a clinically observed population.
- stage in natural history of disease; severity of disease: the selection of subjects for the study includes people with at a stage that is earlier or later than would be found in people who are candidates for the preventive service.
- source, intensity of recruitment: The sources for recruiting subjects for the study and/or the effort and intensity of recruitment may distort the characteristics of the study subjects in ways that could increase the effect of the intervention as it is observed in the study.

Situation:

The degree to which the clinical experience in the situation in which the study was conducted is likely to be reproduced in other settings

- healthcare system: The clinical experience in the system in which the study was conducted is not likely to be the same as experience in other systems because, for

example, the system provides essential services for free when these services are only available at a high cost in other systems.

- country: The clinical experience in the country in which the study was conducted is not likely to be the same as in the U.S. because, for example, services available in the U.S. are not widely available in the other country of study conduct or vice versa.
- selection of participating centers: The clinical experience in which the study was conducted is not likely to be same as in other settings in which the service will be delivered to the U.S. long-term care population because, for example, the centers have ancillary services not available generally.
- time, effort, and system cost for the intervention: The time, effort, and cost to develop the service in the study is more than would be available outside the study setting.

Providers:

The degree to which the providers in the study have the skills and expertise likely to be available in general settings

- training to implement the intervention: The intervention in the study was done after giving providers special training not likely to be available or required in U.S. long-term residential care settings
- expertise, skill to implement intervention: The providers included in the study had expertise and/or skills at a level that is higher than the level likely to be encountered in typical settings.
- ancillary providers: The study intervention relied on ancillary providers who are not likely to be available in typical settings.

Global Rating of External Validity (Generalizability):

External validity is rated “good” if the study differs minimally from the US long-term residential care population/ situation/ providers and only in ways that are unlikely to affect the outcome; it is highly probable (>90%) that the clinical experience with the intervention observed in the study will be attained in the US primary care setting.

External validity is rated “fair” if the study differs from the US long-term residential care population/ situation/ providers in a few ways that have the potential to affect the outcome in a clinically important way; it is only moderately probable (50%-89%) that the clinical experience with the intervention in the study will be attained in the US primary care setting.

External validity is rated “poor” if the study differs from the US long-term residential care population/ situation/ providers in many way that have a high likelihood of affecting the clinical outcomes; the probability is low (<50%) that the clinical experience with the intervention observed in the study will be attained in the US primary care setting.

Table D-1. Quality ratings for trials

Author, Year Trial Name	Was randomization adequate?	Was allocation concealment adequate?	Were groups similar at baseline?	Were outcome assessors masked?	Were care providers masked?	Were patients masked?	Was overall attrition ≥20%?	Was differential attrition ≥15%?	Did the study use ITT analyses?	Were outcome measures equal, valid and reliable?	Quality Rating^a
Chapman, 2007 ¹ NA	Yes	Yes	No	No	No	No	NR	NR	NR	Yes	Poor
Cohen, 1999 ² NA	NA	NA	No	Yes	NR	No	Yes	No	NR	Yes	Poor
Cohen, 2003 ³ NA	NA	NA	No	NR	No	NR	No	Yes	NR	NR	Poor
Dowling, 2005 ⁴ NA	Yes	No	NR	Yes	No	No	NR	NR	Yes	Yes	Fair
Dowling, 2007 ⁵ NA	Yes	No	NR	No	No	No	NR	NR	NR	No	Poor
Fritsch, 2009 ⁶ NA	Yes	NR	Yes	No	No	No	NR	NR	No	Yes	Fair
Hickman, 2007 ⁷ NA	Yes	No	Yes	No	No	No	No	No	No	Yes	Fair
Holmes, 2007 ⁸ NA	No	No	No	No	NA	No	No	No	No	Yes	Poor
Jablonski, 2005 ⁹ Family Involvement in Care	NR	NR	No	NR	No	No	Yes	No	No	Yes	Poor
Kovach, 2006 ¹⁰ NA	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Good
Lawton, 1998 ¹¹ NA	No	NR	NR	No	No	NR	Yes	No	No	NR	Poor
Maas, 2004 ¹² NA	Yes	No	Yes	NR	No	No	NR	NR	No	Yes	Poor
McCallion, 1999 ¹³ NA	NR	NR	No	No	Yes	No	No	NR	Yes	Yes	Poor
Moyer, 1996 ¹⁴ NA	No.	No	No	yes	Yes	Yes	NR	NR	NR	Mixed	Poor
Reichenbach, 1991 ¹⁵ NA	Yes	NR	Yes	NR	NA	NA	No	No	No	No	Poor
Remington, 2002 ¹⁶ NA	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Fair
Robison, 2007 ¹⁷ Partners in Care	NR	NR	No	NR	No	No	No	No	No	Yes	Poor

Table D-1. Quality ratings for trials (continued)

Author, Year Trial Name	Was randomization adequate?	Was allocation concealment adequate?	Were groups similar at baseline?	Were outcome assessors masked?	Were care providers masked?	Were patients masked?	Was overall attrition ≥20%?	Was differential attrition ≥15%?	Did the study use ITT analyses?	Were outcome measures equal, valid and reliable?	Quality Rating^a
Rosswurm, 1990 ¹⁸ NA	NR	Yes	Yes	Yes	No	NR	No	No	Yes	Yes	Good
Sloane, 2004 ¹⁹ NA	NR	NR	Yes	Yes	No	No	No	No	Unclear/NR	Yes	Fair
Tappen, 1994 ⁴⁰ NA	NR	NR	NR	Yes	No	NA	NR	NR	No	Yes	Fair
Tosleand, 1997 ²¹ NA	NR	NR	Yes	Yes	No	No	Yes	No	Unclear/NR	Yes	Fair
Whall, 1997 ²² NA	NA	No	NR	NR	NR	NR	No	No	No	Yes	Fair

^aRationale for poor quality studies can be found in Table 3.

Abbreviations: NA, not applicable; NR, not reported

Table D-2. Quality ratings for prospective cohort studies

Author, Year Trial Name	Were groups recruited from the same source population?	Were subject in both groups recruited over the same time period?	Were inclusion and exclusion criteria equally applied in both groups?	Was an attempt made to blind the outcome assessors?	Was the time of follow- up equal in both groups?	Were differences between groups taken into account in the statistical analysis?	Was confounding adequately accounted for either through study design or statistical analysis?	Was overall attrition ≥20%?	Was differential attrition ≥15%?	Were any participants who started the trial excluded from the analysis?	Were outcome measures equal, valid and reliable?	Quality Rating ^a
Sloane, 1991 ²³ NA	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Good
Sloane, 2005 ²⁴ Collaborative Studies of Long-Term Care	Yes	Yes	Yes	No	Yes	Yes	Yes	NA	NA	No	Yes	Good
Sloane, 2008 ²⁵ Collaborative Studies of Long-Term Care	Yes	No	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Good
Volicer, 1994 ²⁶ NA	No	Yes	Yes	No	Yes	NR	Yes	NR	NR	NR	Mixed	Poor
Zimmerman, 2005 ²⁷ Dementia Care Project	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Fair

^aRationale for poor quality studies can be found in Table 3.

Abbreviations: NA, not applicable; NR, not reported

Table D-3. Rationale for Poor Quality Rating

Author, Year Trial Name	Primary Reasons for Poor Quality Rating
Chapman, 2007 ¹ NA	High potential for performance bias. Care providers were providing care in both arms of the study. High potential for selection bias. Differences between groups in baseline characteristics. Potential for attrition bias. Study did not report attrition statistic.
Cohen, 1999 ² NA	High potential for selection bias. Baseline groups not similar, study not randomized and differences not controlled for. High potential for performance bias as care providers were not masked. High potential for attrition bias. Study attrition $\geq 20\%$. Not clear as to whether ITT analysis was used.
Cohen, 2003 ³ NA	High potential for selection bias. The study had different eligibility criteria for group 1 and group 2. High potential for attrition bias. Differential attrition equaled 28% between groups. Potential for performance bias. Changes in treatment which were not monitored were noted as confounder.
Dowling, 2007 ⁵ NA	High potential for detection bias. The raters were not blind and they changed over time; also, inter-rater reliability was not tested. High potential for selection bias. Allocation concealment was not adequate. Unequal sized groups with no report of block size or rationale for differences in size. Differences in baseline characteristics not tested for significance.
Holmes, 2007 ⁶ NA	High potential for performance bias. Study reports that the less worse affect scores may have been the result of more direct care hours. Also poor fidelity to the intervention. High potential for selection bias. Covariates for cognition and functional status did not strongly control enough for case mix differences at baseline. Continued direct care intervention at even higher pre-intervention levels may have caused the less worse affect in the intervention group.
Jablonski, 2005 ⁹ Family Involvement in Care	High potential for attrition bias. Attrition rate was $>20\%$. Did not account for missing data in the analysis. Reported differences between those lost to attrition. High potential for selection bias. Groups dissimilar at baseline. High potential for performance bias. Differences in the "dose" of the intervention per person.
Lawton, 1998 ¹¹ NA	High potential for attrition bias. Attrition was 44%-49%, and ITT analyses were not done. High potential for performance bias. The study makes explicit mention related to poor fidelity. High potential for detection bias. Raters aware of the identity of control and experiment groups as well as the hypotheses of the intervention's impact.
Maas, 2004 ¹² NA	High potential for attrition bias. Overall attrition equaled 55%.
McCallion, 1999 ¹³ NA	High potential for selection bias. Randomization scheme not reported. Significant difference in baseline characteristics. High potential of detection bias. Contamination by inadequate blinding.
Moyer, 1996 ¹⁴ NA	High potential for performance bias. Unclear that the interventions were different from each other at all. High potential for reporting bias. The abstract and body of the text differed in which group was experimental and which was control. Limited data are presented. High potential for selection bias. Study utilized convenience sample; residents of one larger facility was compared with 3 smaller ones.
Reichenbach, 1991 ¹⁵ NA	High potential for detection bias. Lack of assessor blinding, with consequent observer bias is strongly suspected based on statistically significant findings in all measures. High potential for selection bias. Lack of information on whether randomization occurred, and whether the experimental and control groups were within separate facilities or within both of the study facilities.
Robison, 2007 ¹⁷ Partners in Care	High potential for selection bias. Study does not report baseline statistics. High potential for reporting bias. Selective outcome reporting. High potential for attrition bias. Completer analysis used. When examining ITT analysis, most of the significant effects go away.

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