Reference; Country	Design	Participants; Mean age; Percent of female	Description of intervention group (IG) and control group (CG)	Relevant outcome measures; Data collection time points	Relevant results
<i>Impact on a</i> Wang et al. (2017a); China	<i>ttitudes tov</i> Cluster RCT	<i>ward people with</i> 170 health professionals; 30.9; 82.9%	IG: A dementia and their care IG: A dementia education and knowledge translation program; trained nurses and general practitioners delivered the education program to their peers using weekly in-service education hours and provided learning support to reinforce knowledge and skills using	DCAS- 'Heartfelt'; Baseline, immediate post-	Significant effects on improved DCAS- 'Heartfelt' at post-test ($p=0.001$), and at
			newsletters and messages on the notice board (n=85) CG: Usual care (n=85)	test, 3-month follow-up	follow-up (p= 0.001) in IG compared to CG
Wang et al. (2017b); China	Cluster RCT	115 Primary care nurses; 30.75; 93.9%	IG: 2-weekly lectures about dementia understanding and quality care strategies lasting three-hours each with a face-to-face discussion and 3-month WeChat learning interaction providing videos, case studies, readings, and online discussion (n=61) CG: training for the care of older people with disability providing 2-weekly lectures lasting 3 hours each with a face-to-face discussion (n=54)	CDAS; Baseline, 2- week follow- up, 3-month follow-up	Significant effects on improved CDAS in IG compared to CG at two follow-ups (p <0.001)
Sepe-Monti et al. (2016); Italy	Cluster RCT	164 informal caregivers of PwD; 58.7; 65.9%	IG: Savvy Caregiver Program (SCP); six, weekly, 2-h sessions, using various strategies to enhance the quality of life of the caregivers as well as their ability to undertake and succeed in their caregiving role; the provision of information, educational instruction, problem solving, skills training, skills to manage troublesome care recipient behavior, cognitive strategies for negative emotional responses as well as strategies for enhancing the well-being of caregivers and the quality of life of patients with dementia (n=80) CG: A two-session group program providing medical information about Alzheimer's disease with discussion about difficulties in managing the patients/ behavioral problems (n=84)	COPE-PA; Baseline, 6- month follow-up	Significant effects on improved COPE-PA in IG compared to CG at 6-month follow-up ($p = 0.05$)

Appendix 1. Characteristics of Included Studies

Reference;DesignParticipants;CountryMean age;Percent offemale			Description of intervention group (IG) and control group (CG)	Relevant outcome measures; Data collection time points	Relevant results	
Conway & Chenery (2016); Australia	Cluster RCT	38 care staff working in community aged care; 53.7; 84.2%	IG: MESSAGE Communication Strategies in Dementia for Care Staff training program using a multimedia format to provide practical communication strategies to maximize communication between staff and people with dementia by compensating for the cognitive-linguistic impairments associated with dementia, facilitating interpersonal or relational aspects of communication, and incorporating conversation as part of care; The program included 60-minute training session of presentation of the training DVD regarding communication changes in dementia, explanation and exemplification of the MESSAGE strategies, and example conversation vignettes, and discussion with post-training (n=22) CG: Usual care (n=16)	ADQ; Baseline, 3-month follow- up	No significant effects on ADQ in IG compared to CG	
Hattink et al. (2015); Netherlands & UK	Parallel RCT	83 informal and professional caregivers; 50.65; 80.75%	IG: STAR training portal, a web-based portal consisting of 8 modules related to dementia and dementia care (e.g., emotional impact of dementia, support strategies to help people cope with consequences of dementia, positive and empathic communication) over 2-4 months; The modules consist of text, videos, interactive exercises, knowledge tests, references to other websites, literature, and videos (n=37) CG: Usual care (n=46)	ADQ; Baseline, immediate post- test	Informal caregivers: Significant effects on improved ADQ in IG compared to CG (p=0.001) Professional caregivers: No significant effects on ADQ in IG compared to CG	
Clare et al. (2013); UK	Cluster RCT	65 staff in care homes;38.85; 79%	IG: two 90- minute training sessions covering the nature of residents' awareness, use of the AwareCare observational measure of awareness in severe dementia, guidance on developing their skills in communicating with residents with severe dementia (weeks 1-2); structured observations of residents using the AwareCare measure (weeks 3-8) (n=32) CG: Usual care (n=33)	ADQ; Baseline, immediate post- test	No significant effects on ADQ in IG compared to CG	

Reference; Country	Design	n Participants; Description of intervention group (IG) and control group (CO Mean age; Percent of female		Relevant outcome measures; Data collection time points	Relevant results	
Hepburn et al. (2005); USA	Parallel RCT	215 informal caregivers; 66.5; 75.63%	IG: The Partners in Caregiving (PIC) program aimed to develop and strengthen skills, knowledge and attitude of dementia family caregivers (through a six-week; 2-hour per week); The curricula include use of an activity analysis to strengthen the caregiver's ability to match daily activities to care recipient's capacities; demonstrations of management techniques by therapists, homework to practice skills and strategies, and follow-up coaching (n=151) CG: Usual care (n=64)	BACS; Baseline, 6-month follow- up, 12-month follow-up	Significant effects on improved BACS in IG compared to CG at 6- month follow-up (p = .016), but not at 12- month follow-up	
Impact on po	ositive aspe	ects of caregiving				
Pankong et al. (2018); Thailand	Parallel RCT	72 informal caregivers; 55.39; 77.75%	IG: The Program for Enhancing the Positive Aspects of Caregiving aimed to increase caregiving self-efficacy, spirituality, social support, and maintain positive caregiving experiences; six group sessions (once a week, for 2 hours over 6 weeks) and one individual counseling session (at week 7); used strategies included information provision, skill training, exploring spirituality, finding positive events in their lives, mindfulness practice, positive reappraisal activities, and goal setting practice (n=36) CG: Usual care (n=36)	PAC; Baseline, 8- week follow-up, 12-week follow- up, 20-week follow-up	Significant effects on improved PAC in IG compared to CG at follow-ups (p=0.000)	
Núñez- Naveira et al. (2016); Denmark, Poland, and Spain	Parallel RCT	61 informal caregivers; NR; 63.9%	IG: An e-learning platform (understAID) with a database of contents in 5 modules with information about 15 different topics related to the care of PwD (e.g., cognitive declines, daily tasks, behavioral changes) and caring for oneself as a caregiver (e.g., coping with own stress and motivation), over a 3-month period (n=30) CG: Usual care (n=31)	RCSS; Baseline, immediate post- test, 12-month follow-up	No significant effects on RCSS in IG compared to CG	

Reference; Country	Design	Participants; Mean age; Percent of female	Description of intervention group (IG) and control group (CG)	Relevant outcome measures; Data collection time points	Relevant results
Tremont et al. (2015); USA	Parallel RCT	250 distressed informal caregivers; 62.72; 78%	IG: 16 psychoeducation calls over a 6-month period providing dementia education, emotional support, directing caregivers to appropriate resources, encouraging caregivers to attend to their physical, emotional, and social needs, and teaching strategies to cope with ongoing problems (n=133) CG: 16 supportive calls with active listening and open questions over a 6-month period (n=117)	PAC; Baseline, immediate post- test	Significant effects on improved PAC in CG compared to IG (p=0.041)
Czaja et al. (2013); USA	Parallel RCT	110 informal caregivers; 59.47; 82%	IG: A technology-based multicomponent intervention that provided education, support, and skill-building delivered in-home via videophone technology over 5 months; learning problem- solving strategies to deal with the care recipients' problem behaviors and training on stress management, healthy behavior strategies, community resources, and communication strategies (n=30) CG: Two control conditions; Attention control group received the same amount of contact as those in IG, but the content was about nutrition and healthy eating; Information-only control group received educational materials about basic information about dementia, caregiving, safety, and community resources and received a brief telephone "check-in call" at 3 months post randomization (n=63)	PAC; Baseline, immediate post- test	Significant effects on improved PAC in IG compared to CG (p <0.007)
Beauchamp et al. (2005); USA	Parallel RCT	299 informal caregivers; 46.9; 73%	IG: A Web-based, multimedia support program providing text material and videos regarding positive caregiving strategies (emphasizing problem-focused techniques and social support skills) over 30 days (n=150) CG: Usual care (n=149)	PAC; Baseline, immediate post- test	Significant effects on improved PAC in IG compared to CG (p = 0.021)

Reference; Country	Design	Participants; Mean age; Percent of female	Description of intervention group (IG) and control group (CG)	Relevant outcome measures; Data collection time points	Relevant results	
Impact on en	npathy					
Hattink et al. (2015); Netherlands & UK	Parallel RCT	83 informal and professional caregivers; 50.65; 80.75%	IG: STAR training portal, a web-based portal consisting of 8 modules related to dementia and dementia care (e.g., emotional impact of dementia, support strategies to help people cope with consequences of dementia, positive and empathic communication) over 2-4 months; The modules consist of text, videos, interactive exercises, knowledge tests, references to other websites, literature, and videos (n=37) CG: Usual care (n=46)	IRI-EC; Baseline, immediate post- test	Both informal and professional caregivers: Significant effects on improved IRI-EC in IG compared to CG (p <0.001)	
Irvine et al. (2012); USA	Parallel RCT	159 nurse aides; NR; 86.8%	IG: An individualized Internet training with a behaviorally focused and video-based training that included content on skills for safely dealing with physical aggression of residents; 2 weekly visits (n=80) CG: Usual care (n=79)	Four-item empathy scale (Ray & Miller, 1994) with adequate internal reliability and good test-retest reliability; Baseline, 1-month follow-up, 2- month follow-up	Significant effects on improved empathy scale in IG compared to CG (corresponding to small effects; $d = 0.33$).	

ADQ: Approaches to Dementia Questionnaire; BACS: Beliefs About Caregiving Scale; CDAS: Chinese Dementia Attitudes Scale; CG: control group; COPE-PA: Coping Orientations to Problems Experienced –positive attitude; DCAS: Dementia Care Attitude Scale; IG: intervention group; IRI-EC: Interpersonal Reactivity Index- empathic concern; NR: not reported; PAC: Positive Aspects of Caregiving; RCSS: Revised Caregiving Satisfaction Scale; RCT: randomized controlled trial

Appendix 2. Risk of Bias (RoB) of Included Studies

Reference	Random	Allocation	Blinding of	Blinding of	Incomplete	Selective	Other	Overall
	Sequence	Concealment	Participants and	Outcome	Outcome	Reporting	Bias	RoB
	Generation		Personnel	Assessment	Data			
Beauchamp et al. (2005)	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Unclear
Clare et al. (2013)	Low	Unclear	High	Low	Low	Low	Low	High
Conway & Chenery (2016)	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Low	Unclear
Czaja et al. (2013)	Unclear	Unclear	Low	Low	Low	Low	Low	Unclear
Hattink et al. (2015)	Low	Low	Low	Low	Low	Low	Low	Low
Hepburn et al. (2005)	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Unclear
Irvine et al. (2012)	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Unclear
Núñez-Naveira et al. (2016)	Low	Unclear	Unclear	Unclear	Low	Low	Low	Unclear
Pankong et al. (2018)	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Unclear
Sepe-Monti et al. (2016)	Low	Low	Low	Low	Low	Low	Low	Low
Tremont et al. (2015)	Low	Low	Low	Low	Low	Low	Low	Low
Wang et al. (2017a)	Low	Low	Unclear	Unclear	Low	Low	Low	Unclear
Wang et al. (2017b)	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Unclear