



Review Article

Dementia training for healthcare professionals: A systematic policy and evidence review

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ABSTRACT

Objective: To review the effectiveness of healthcare professionals' dementia training and consider implications for policy and practice.

Design: Systematic and policy review

Setting: Healthcare services

Participants: Healthcare professionals

Intervention: Training

Measurements: We searched electronic databases for primary research studies (2015–2024) evaluating dementia training for healthcare professionals. We assessed risk of bias using the Mixed Methods Appraisal Tool, prioritising studies scoring 4+, of interventions supported by Randomised Controlled Trial evidence; reporting outcomes using Kirkpatrick's framework. To explore how evidence might translate to practice, using England as a case study, we reviewed relevant policies and consulted professional stakeholders.

Results: We reviewed 63 primary research studies. One met priority criteria; it evaluated a Train-the-Trainer (TTT), team-based reflective practice model, which improved primary care nurses' and doctors' learning, and self-reported practice over ≥ 3 months. Higher quality, controlled studies evaluated a TTT programme for hospital staff, improving client outcomes (agitation) over ≤ 5 days; an expert-led two-day interactive training for inpatient nurses that reduced role strain; and expert-led, nine-week, occupational therapy-derived training programme that improved retirement community staff strategies for client activity engagement. Sixteen policies and related documents highlighted concerns about limited implementation of the Dementia Core Skills Education and Training Framework (DCSETF). Eight focus group attendees considered time a limiting factor to evidence implementation, but valued group training to share experiences; and TTT models to enable tailoring to local contexts.

Conclusions: By increasing reach of dementia training and embedding learning in practice, Train-the-Trainer models can increase care quality and support evidence-based policy implementation.

Introduction

Around one million UK people have dementia, and this is expected to rise to 1.4 million by 2040 [1]. Most healthcare workers, provide care to people with dementia. This requires specific skills and

knowledge, and inadequate training and support can lead to negative outcomes for workers, people with dementia and their families [2].

The Dementia Core Skills Education and Training Framework (DCSETF), published in 2015, outlines learning outcomes that health and social care workers in England are expected to accomplish [3].

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Subsequent service audits in England have indicated that these standards are often unmet [4,5], in part due to lack of access to relevant training [6].

Developing an appropriately skilled care workforce is a policy priority across developed nations, including the UK [7], where a recent review highlighted concerning variations in post-diagnostic care quality, and evidence-based treatment availability, which improved workforce training could address [8].

To inform future policy regarding dementia training for healthcare professionals, we updated a previous systematic review [9]. We aimed to explore how dementia training is best delivered to healthcare workers to improve dementia care and worker wellbeing. This review was conducted within NIHR Dementia and Neurodegeneration Policy Research Unit (DeNPRU-QM) for England. We explored how identified evidence might inform policy implementation and practice in England, considering international relevance of our findings. Our RQ were:

1. What English policies (since 2015) have relevance to dementia training for healthcare professionals?
2. What is the current evidence on how dementia training is best delivered to healthcare workers to improve dementia care and worker wellbeing?
3. How do English stakeholders consider current evidence might inform future policies and practice to improve healthcare workforce training?
4. How might findings regarding utility of the evidence in an English context could inform international debates?

Methods

Defining social and policy context

The study group agreed sources (Table S1) and terms to search English policy and grey literature (from 2015) relevant to dementia skills training for healthcare professionals to respond to RQ1. Search terms were: “health” and “training” and “dementia”. SZ and CC independently identified potentially relevant documents in November 2024, then discussed which to include based on relevance to the research question. Findings were discussed with the wider study group to develop descriptions of policy contexts and challenges as our empirical and conceptual understanding evolved during the review.

Systematic review

The study was conducted in line with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) recommendations [10] and registered in PROSPERO (CRD42024509026).

Search strategy

Databases including PubMed, Embase, Scopus, CINAHL and the Cochrane library were systematically searched from 01 December 2015 (to update the previous review [9]) to 20 February 2024. For the database search, terms related to education OR training were combined with staff AND dementia (Table S2). Searches were restricted to studies published in English.

Eligibility criteria and study selection

After excluding irrelevant titles and abstracts, two reviewers independently screened full-text papers against eligibility criteria to identify studies for inclusion. Discrepancies were resolved through discussion. We included primary research studies reporting the effectiveness of any training or educational intervention for healthcare workers, focused on development of dementia-specific knowledge, values and skills to improve dementia care. We excluded dissertations, conference and meeting abstracts. We excluded studies that trained staff to deliver specific, manualised interventions, or where training

focused on the delivery of care for conditions comorbid with dementia, or delivery of end-of-life care.

Data extraction and quality appraisal

A standardised form was developed to extract data from included studies. We used the Mixed-Methods Appraisal Tool (MMAT) to assess study quality [11]. Studies were independently assessed by two authors and disagreements were resolved by a third author. Studies scoring 4 + /5 were considered high-quality [12].

Data analysis

We categorised studies by intervention settings and delivery models. We narratively synthesised findings, mapping reported outcomes to Kirkpatrick’s framework: learner’s reaction to and satisfaction (Level 1); knowledge, skills, confidence, and attitude change indicating learning has occurred (Level 2); staff behaviour or practices (Level 3); and patient-related outcomes (Level 4) [13]. We report between group differences for controlled studies, within group changes for single group studies, and all relevant outcomes.

Stakeholder meeting

We held one online workshop on November 18th 2024, inviting eight healthcare professionals from diverse roles working with people with dementia, identified via the networks of DeNPRU-QM investigators and collaborators (<https://denpru-qmul.nihr.ac.uk/>) (results list roles represented). To respond to RQ3, we presented findings emerging from our evidence review (see Fig. 1) and asked the group “how feasible and useful might these interventions be in practice?”. We outlined policy review findings and invited the group to identify further relevant sources or documents. MM took verbatim notes and circulated these to attendees after the group, inviting corrections and clarifications. SZ, CC and MM independently identified key descriptive themes, which they refined through discussion.

Results

Defining policy context

We identified sixteen relevant policies (Table S3), identifying no further sources from the stakeholder group. These described an expectation that healthcare workers will receive role-appropriate dementia training [14]. The DCSETF defines training objectives for all healthcare workers (Tier 1), those working regularly with people with dementia (Tier 2) and care leaders (Tier 3). NHS England publications discussed “Training Well” as a component of the Dementia Well pathway [15], and culturally competent care [16].

Two reports advocate Tier 1 training for all hospital staff, wider roll out of Tier 2 and 3 training, and organisational annual reporting of staff training levels [17,18]. A 2018 National Collaborating Centre for Mental Health report recommends that commissioners and providers reach agreements regarding training plans and associated costs, and ensure sufficient workers are trained to appropriate levels [19]. A 2023 Royal College of Psychiatrists audit suggested implementation of these recommendations was patchy [5]. Reports have highlighted training needs around comorbidities [19], behaviours indicating distress, reducing the need for antipsychotics, promoting freedom of movement, and holding challenging conversations [20]. The Royal College of Nursing [21] recommended that training should be team-based, so skills are shared; and include lived experience content.

Systematic review

We included 63 studies meeting the eligibility criteria (Fig. S1).

Setting	Kirkpatrick level 2	Kirkpatrick level 3	Kirkpatrick level 4
Primary care	TTT 20-hour programme involving interactions with educators, peers (case-based discussions) and self-directed learning activities on a mobile platform, for primary care nurses and doctors ²² <i>↑self-reported dementia care practice</i> <i>↑Knowledge and attitudes</i>		
Secondary care and mixed staff groups	-		
Hospital	Expert-led 2-day interactive training for nurses ³⁷ <i>↓strain</i> <i>↑confidence</i>	TTT interactive training for ward staff, 2 x 1.5 hour groups + staff champions ³³ <i>↑care quality</i> <i>↓agitation, delirium, iatrogenic harms</i>	
Social care	Expert (Occupational Therapist)-led, 9-week, occupational therapy-derived training programme for all retirement community employees ⁵³ <i>↑Mastery and team development</i> <i>↑Self-reported person centred care</i>		-

*high priority study in **bold**

Fig. 1. Summary of interventions for which significant between group differences were reported, by site and Kirkpatrick evidence levels 2–4, from high quality, controlled studies* (significant between group outcomes (intervention versus control) are provided in *italics*) *high priority study in **bold**.

Study characteristics

Twenty-six (42%) included studies were rated as high-quality (4 + on MMAT). These are described in Table 1. Only one study met our a priori criteria for prioritisation (in the primary care studies section). We included non-randomised quantitative (n = 12) and mixed-method studies (n = 11), randomised controlled trials (RCT, n = 2) and one qualitative study. Details of studies scoring < 4 on MMAT are in Table S4; and briefly summarised below.

Fig. 1 summarises evidence of effective interventions (and outcomes) identified from higher-quality controlled studies across all settings. Outcomes are categorised in Kirkpatrick's framework and summarised below, for intervention settings: (1) primary care; (2) hospital; (3) social care settings (residential, nursing home or day care services) and (4) secondary care or staff groups across primary and secondary care. We further grouped studies by intervention delivery model: Train-the-Trainer (TTT), expert-delivery (clinical or lived experience expert), tele-mentoring, arts-based, self-directed, asynchronous, in-person or online lecture-based (didactic).

Training for primary care staff

High-quality studies (n = 5)

Train-the-trainer models. The only study that met our criteria for higher priority evidence, an RCT, evaluated a web-based training, comprising two modules and learning interactions with educators, peers and self-directed learning activities, delivered in a TTT model. Compared to a waitlist control group, nurses and general practitioners (GPs) allocated to the intervention training improved on scores of knowledge (Alzheimer's disease knowledge scale [ADKS]; $F = 31.35$; $P < 0.001$), attitudes (Dementia Attitudes Scale [DAS]; $F = 20.57$; $p < 0.001$) and the intent to change practice towards early dementia diagnosis (self-developed scale; $P < 0.05$) up to three months later. In focus groups, participants described a positive impact on their dementia care practice, including screening for cognitive impairment and referring to memory services more frequently (level 2 and 3) [22].

Asynchronous or lecture-based models. An Australian study evaluated a national, dementia-focused Continuing Medical Education (CME) programme for GPs. It comprised at least six hours of structured educational content, with two-thirds interactive or experiential content (case studies and discussion). It was offered as online (six

one-hour modules), large, or small group face-to-face workshops (four 90-minute sessions). Participants' knowledge (mean difference = 2.2; $p < 0.001$), confidence (mean difference = 2.1; $p < 0.001$), awareness of dementia (mean difference = 0.9; $p < 0.001$) and self-reported practice (e.g. referring to support services and using non-pharmacological strategies) (mean difference = 1.3; $p < 0.001$) improved post-intervention (level 2 and 3) [23]. A second Australian training programme for primary care nurses aimed to promote evidence-based approaches to dementia detection, diagnosis and support. It was available in online (four one-hour asynchronous modules) and in-person (one 3.5-hour group session) modalities. In 1290 primary care nurses who participated, training improved knowledge, confidence and perceived importance of dementia diagnosis (bespoke measure; $p < 0.001$) (level 2). Improvement after in-person training were greater, relative to online delivery over six months [24]. Finally, an RCT, which reported Level 2 evidence, compared online and in-person versions of a one-hour lecture on Alzheimer's disease, for community care staff. There were no significant differences in ADKS scores between groups post-intervention ($p > 0.05$) [25].

Self-directed asynchronous models. Program for Advancing Cognitive Disorders Education for Rural Staff (PACERS) was a USA programme for healthcare professionals working in rural areas, developed in six one-hour online asynchronous modules. Participating staff reported self-perceived ability to apply learnt knowledge and skills (mean > 4 /5) (level 2) [26].

Lower quality studies (n = 7, Table S3). One lower quality study reported that after a four-hour in-person training on Advance Care Planning (ACP), primary care clinicians documented more ACPs (level 4) [27]. An online course on interprofessional communication for primary care professionals [28], face-to-face TTT model of Person-Centred Care (PCC) training for primary care nurses [29], online course on medication and behaviour management with ongoing support from geriatric experts for primary care nurses [30] and a hybrid postgraduate dementia course for primary care staff ³¹ positively impacted care. The postgraduate hybrid dementia [31], online course on interprofessional communication [28], face-to-face TTT model of PCC training [29] and another online tool to assist with diagnosis and care [32], improved

Table 1
Characteristics of the studies rated as higher quality.

Study Country	Setting and participants	Intervention	N	Control	N	Primary outcome	Training completion	Response rate	Outcome (months after BL)	Outcomes (Kirkpatrick levels)				Study design	Validity
										1	2	3	4		
Training for primary care staff															
Bryan ²⁶ USA	Rural, 171 care nurses, doctors, psychologist, social workers	PACERS ¹ : Six one-hour online modules selected from topics of dementia and delirium, cognitive ageing and caring, decision making, safety, driving	> 3000 modules	-	-	-	-	-	PI	✓	✓			QN	4
Casey ²³ Australia	General practitioners	Dementia focused Continuing Medical Education: educational content on dementia assessment, care planning and management; F2f ⁶ & online, 6 hrs	1732	-	-	-	1432/1732	-	PI, 6 – 9	✓	✓	✓		MM	4
Islam ²⁴ Australia	Primary health care nurses	4 steps to building dementia practice in primary care: offered in four hours online or f2f to build skills, confidence and capacity.	1290	-	-	-	-	-	PI,6		✓			QN	4
Ma ²⁵ China	Community health centre staff	Online AD knowledge one-hour training	119	F2f version	142	-	-	111/119	PI	✓	✓			RCT	5
Wang ²² China	Primary care nurses	TTT model including two modules and learning interactions. 20-hour educational material (pre-reading, short lectures and case studies) delivered by a nurse & a GP - focused on dementia and PCC. Trainers received a 3-day f2f education workshop, workbook, four DVDs and ongoing support	61	Waitlist	54	-	-	101/115	PI, 3		✓	✓		RCT	5
Training for hospital staff															
Chenoweth ³³ Australia	People aged 60 + with dementia, and hospital staff caring for them	Champions: three-day f2f workshops covering training topics, facilitating & embedding learning; Learners: two f2f 1.5-hour small groups by lead champion on PCC & communication approaches, neuropsychiatric symptoms & 3-month support to implement learning	26	Dementia & delirium teaching, F2f, 3 hrs	21	CMAI, QUIS	-	-	PI			✓	✓	QN	4
Crandall ⁴⁰ Canada	Hospital staff (mostly nurses and personal support workers)	GPA: online 5-hour asynchronous programme focused on PCC, dementia, communication; narrated slides with animations, video clips and tile-matching exercises	100	-	-	No info	94/100	86/100	PI, 2	✓	✓	✓		MM	4
Elvish ³⁵ UK	Staff working in general hospital units	TTT model: six-hour f2f course including guides, presentations and interview clips with people with dementia and their families; covering: dementia, communication, impact of environment, PCC approach to behaviours. Trainers received 2-day training	517	-	-	CBS	517/517	480/517	PI		✓			QN	4
Gehr ²⁷ Germany	Nurses from acute hospital	2-day f2f programme by experts using reflective questions, group work, discussions, case studies, role plays and analysis of film scenes; covering	39	Educational training 1.5hrs	56	-	-	68/95 -	PI	✓	✓			QN	4

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Table 1 (continued)

Study Country	Setting and participants	Intervention	N	Control	N	Primary outcome	Training completion	Response rate	Outcome (months after BL)	Outcomes (Kirkpatrick levels)				Study design	Validity
										1	2	3	4		
Harwood ³⁸ UK	Hospital professionals (doctors, nurses, therapists)	diagnosis, challenging behaviours, risks, communication, end of life, family carers support and self-care VOICE Communication skills training course delivered f2f over two days by clinicians and clinical educators including practising communication skills in small groups with simulated scenarios, group discussions based on videoed real-life scenarios	44	-	-	-	-	43/44	PI, 1	✓	✓			MM	5
Rosi ³⁹ Italy	Healthcare staff at a hospital (mostly nurses)	IDENTITA ¹⁹ : five-hour f2f training based on PCC and delivered by dementia experts using didactic content, slides, assessment tools, and handouts including cases studies and personal experiences	93	-	-	No info	62/93 (66.6%)	62/93 (66.6%)	PI, 6	✓				QN	4
Sampson ³⁴ UK	General hospital lead nurse, dementia training specialist & clinicians	24 targeted, interactive dementia training modules (30 – 60min) including Tier 1 level training, with the ability to be tailored for specific job responsibilities or different training modalities.	2020	-	-	No info	No info	456/2020 (27%)	3	✓		✓		MM	4
Yamaguchi ³⁶ Japan	Acute care nurses from university hospitals and cancer centre	Virtual reality scenarios around medication support, medical restraint, and surgery, key issues for dementia nursing care in acute hospitals via 360° headsets, with quiz game and discussions. Three one-hour f2f sessions over 3 months, in groups of 4 – 6 participants	20	TAU ²⁰	19	No info	38/39 (97.43%)	No info	1	✓				QN	4
Training for healthcare staff in social care settings															
Chan ⁶⁴ Hong Kong	Residential, day care and community centre staff (nursing, clerical and social care)	12x two-hour group training: case sharing, group discussions and reflective exercises covering dementia, PCC, communication, providing support and legal issues (TTT model: 3-day facilitator training)	1129 carers; 218 F	-	-	No info	No info	1264/1347 (93.8%)	12	✓				MM	5
Hartung ⁵⁵ Canada	Nurses & support workers in LTCF	2.5 hrs f2f workshop on discussing therapeutic lying, as a last resort intervention for persons with dementia	17	-	-	No info	17/17 (100%)	17/17 (100%)	PI	✓				QN	4
Hulko ⁵⁶ Canada	Residential care nurses	ICC online 8 – 10 h training in 8 weeks on colonisation history and effects on health and services, then a storytelling session by elder about culturally safe dementia care	38	-	-	No info	15/38 (39.5%)	15/38 (39.5%)	PI	✓				MM	4
McKay ⁵³ USA	All employees of LTCF	Nine-week f2f training on OA ²² facilitated by an occupational therapist	14	Dementia training f2f, 9 weeks	14	No info	28/28 (100%)	28/28 (100%)	PI	✓		✓		MM	5
Walsh ⁵⁴ UK	General practitioners and nursing home staff	RAPID ²³ complex training: two-day f2f education on communication, antipsychotics, understanding emotions and an assessment tool	20	-	-	Feasibility	20/20	20/20	PI	✓		✓		MM	5

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Table 1 (continued)

Study Country	Setting and participants	Intervention	N	Control	N	Primary outcome	Training completion	Response rate	Outcome (months after BL)	Outcomes (Kirkpatrick levels)				Study design	Validity
										1	2	3	4		
Williams ⁵⁷ USA	Nursing assistant, activities coordinator, social worker, support staff from day services	CHATO ²⁴ : education: 3 × 1-hour modules on communication, identification of elderspeak using twenty video-recorded examples and improved communication practices	22	-	-	No info	19/22 -	19/22 -	PI	✓	✓			MM	4
Interventions targeted at mixed/secondary care health staff															
Ayisi-Boateng ⁷⁵ Ghana	Community health professionals	4-hour f2f workshop on epidemiology, diagnosis and treatment of AD, support for families and mental health	49	-	-	ADKS	49/49 -	-	PI	✓				QN	5
Clark ⁷¹ USA	Professionals working with people with IDD & dementia: LTCF & community settings	ECHO: tele-mentoring: 11 monthly one-hour zoom sessions: didactic presentation, case presentation by a trainee and discussion, then 10-minute update of previous month's case	145	-	-	No info	No info	106/145 -	PI	✓				MM	4
Cotter ⁷⁴ USA	Doctors in a dementia specialist clinic	One-hour online/f2f presentation on knowledge, attitude and advanced care planning in dementia	16	-	-	-	16/16	16/16	PI	✓			✓	QN	4
Fernandez ⁷⁰ USA	Clinicians from community settings	ECHO: ten online sessions	31	-	-	-	-	83.96%	Mid, PI			✓		QN	4
Heward ⁷³ UK	Healthcare staff in dementia training roles (hospital & community)	'DEALTS2': simulation-based one day f2f group programme on delivering a manualised group training lasting 4 h for small groups of professionals covering dementia risk, PCC and communication.	199	-	-	-	199/199	183/199 PI; 51/199 FU	PI, 12	✓	✓		✓	QL	5
Heward ⁷² UK	Professionals from LTCF, hospital, community settings	Visual Arts Program: art viewing and art making sessions with person with dementia. Twelve two-hour f2f sessions over a year	58	-	-	-	-	-	6	✓				MM	4

Legend- ADKS- Alzheimer's Disease Knowledge Scale; AD- Alzheimer's Disease; BL- Baseline; CBS- Controllability Beliefs Scale; CHATO- Changing Talk Online; CMAI- Cohen-Mansfield Agitation Inventory; DEALTS2- Dementia Education And Learning Through Simulation 2; ECHO: Extension for community healthcare outcomes; F-Facilitators; f2f- face to face; FU- follow-up; GP- general practitioner; GPA- Gentle persuasive approaches; IDD- intellectual and developmental disabilities; ICC- Indigenous Cultural Competency; IDENTITA: Italian Dementia-Friendly Hospital Trial; LTCF: Long Term Care Facilities; MM-mixed-methods; OA- Occupational adapting; PACERS- Program for Advancing Cognitive Disorders Education for Rural Staff; PCC- person-centred care; PI- post-intervention; QL- qualitative; QN- quantitative; QUIS- Quality of interactions Schedule; RAPID- Rationalising Antipsychotic Prescribing in Dementia; RCT- Randomised Controlled Trial; TAU- treatment as usual; TTT- Train the trainer; VOICE- Videoing to improve dementia communication education

knowledge, attitudes and confidence (level 2) in primary care staff.

Summary of higher quality evidence.

- A high-priority study evaluated a 20-hour, **TTT programme** involving interactions with educators, peers (case-based discussions) and self-directed learning activities on a mobile platform, for primary care nurses and doctors; the intervention improved self-reported change in dementia care practice (level 3) and knowledge and attitudes to dementia (level 2) for up to three months, relative to the control condition.
- In Australian single group studies of interventions provided in a choice of **online asynchronous modules or face to face formats**, a national training programme for GPs (interactive sessions, including case-based discussions) improved knowledge and self-reported practice (levels 2 and 3) for up to nine months; and a programme for nurses improved knowledge for up to six months (level 2).

Training for hospital staff

High-quality evidence (n = 8)

Train-the-trainer models (n = 3). Of the three studies evaluating TTT models, only Chenoweth [33] included a control condition, in a pilot study, testing a PCC training programme. Selected staff were trained to be 'champions' or trainers, in three-day workshops. A champion and study investigator then facilitated two 1.5-hour small group sessions for nurses and allied health staff; and supported implementation of learning over three months. In short hospital stays (4–5 days), in patients cared for by trained staff, staff-rated agitation measured by Cohen-Mansfield Agitation Inventory (incidence rate ratio [IRR] = 0.84, 95% CI: 0.70 to 0.99; $p = 0.04$), delirium (odds ratio [OR] = 0.1, 95% CI: 0.005 to 0.85; $p = 0.033$) and iatrogenic harms ($p = 0.02$) decreased (level 4) and quality of care measured by Quality of Interactions Schedule (QUIS; IRR = 1.38, 95% CI: 1.06 to 1.80; $p = 0.017$) increased (level 3), compared to the control condition. Only improvements on iatrogenic harms were maintained for 8 days [33].

In a second study, Sampson [34] evaluated a structured training package, delivered by ward staff after training. It comprised 24 interactive dementia modules (30–60 min) including DCSETF Tier 1 and 2 topics. Modules were standardised but could be tailored to specific roles and delivered in-person, groups or one-to-one. After training, Sense of Competence in Dementia care [SCID] scale scores improved (mean score 43.2 to 50.7; $p < 0.001$) (level 2), and observations indicated improved quality and quantity of person-focused interactions on wards where staff received training (level 3), over three months [34]. The final TTT study evaluated a six-hour course delivered by trained staff facilitators, which included video clips of people affected by dementia. After training, participants scores improved on the Knowledge in Dementia scale (KIDE) ($r = -0.8$; $p < 0.001$), Confidence in Dementia [CODE] ($r = -0.96$; $p < 0.001$) and self-efficacy in managing challenging behaviours (Controllability Beliefs Scale; $r = 0.51$; $p < 0.001$) (level 2) [35].

Expert-delivery models (n = 4). These studies evaluated expert-led, in-person group interventions that sought to change knowledge, confidence and attitudes through exposure to lived experience, simulations, and role-play activities in training programmes lasting from three hours to two days. All aimed to improve communication and PCC skills, and management of challenging behaviours, in the hospital environment. All reported evidence at Kirkpatrick Level 2. Two studies included a control condition. These included a Japanese study evaluating the impact of three, one-hour sessions for acute care nurses, including virtual reality simulations of key issues for dementia nursing care, followed by games and discussions. There were no significant between-group difference in outcomes (Dementia Nursing Competency Scale in Acute Hospitals [DNCS-AH]; Staff Experiences of Working with Demented Residents questionnaire [SEWDR]) KIDE; and DAS) up to one month after training [36].

Two studies evaluated two-day training programmes facilitated by clinical experts in Germany and the UK which improved confidence of attendees in dementia care. The German programme for nurses, evaluated in a controlled study, was facilitated by nursing and gerontology experts using reflective questions, facilitated discussions, case studies, role-plays and film scenes analysis. Compared with the control condition, perceived strain (Modified Nursing Care Assessment Scale [M-NCAS]; $F = 7.70$; $p = 0.007$) and confidence (CODE; $F = 18.05$; $p < 0.001$) improved in the training group, while attitudes did not (M-NCAS; $F = 1.87$; $p = 0.17$) [37]. The UK programme, Videoing to improve dementia communication education (VOICE) was co-produced with stakeholders using similar learning strategies. Participants improved in confidence (CODE; mean difference = 5.5; 95% CI: 4.1 to 6.9; $p < 0.001$) and knowledge of communication in dementia (unvalidated measure; 1.5; 95% CI: 1 to 2; $p < 0.001$) [38]. A briefer, five-hour programme in Italy that used didactic teaching, and included learning from cases studies and personal experiences was associated with improved knowledge (Dementia Knowledge-20 [DK-20]; $F = 41.39$; $p < 0.001$), confidence (CODE; $F = 8.64$; $p < 0.001$), and increased personhood subscale scores on the approaches to dementia questionnaire (ADQ; $F = 3.85$; $p = 0.02$) up to 6 months after training [39].

Self-directed asynchronous models (n = 1). Crandall evaluated 2–3 h of online, self-directed PCC training over six weeks comprising narrated slides, video clips and exercises in a mixed-methods, single group study [40]. In focus groups, participants reported using learnt, more tailored PCC for challenging behaviours. Knowledge (bespoke measure; $F = 14.78$; $p < 0.001$), self-efficacy (Self-Perceived Behavioural Management Self-Efficacy Profile [SBMSEP]; $F = 34.53$; $p < 0.001$) and competence in dementia care (Sense of Confidence in Dementia Care Staff scale [SCIDS]; $F = 61.88$; $p < 0.001$) increased post-intervention; improvements were maintained at 6 weeks (level 2) [40].

Lower quality studies (n = 14, Table S4). These findings aligned with higher quality studies reported above. They reported: level 4 evidence for an intervention described above [39]: clients of trained professionals maintained their functional ability after discharge [41]. They reported level 3 evidence that staff trained in PCC approaches used more person-centred communication [42,43]; and level 2 evidence for interventions that improved staff knowledge, attitudes and confidence [42–52].

Summary of higher quality evidence.

- Interactive training packages delivered by ward staff using **TTT models** improved outcomes for patients with dementia (level 4) in a controlled study, and in staff practice (level 3) and learning (level 2) in a single group study.
- In controlled studies evaluating **expert-delivered, in-person group interventions**, three, one-hour groups for acute care nurses in Japan to address critical issues in dementia care did not change level 2 outcomes; while a two-day workshop involving interactive, case-based methods did reduce strain and improved confidence, though attitudes did not change post-intervention (level 2). Two single group, higher quality interventions lasting 5–6 h improved level 2 outcomes.
- A single group study found that 2–3 h of interactive online training was associated with improvements in staff practice (level 3) and learning (level 2) for up to six weeks.

Training for healthcare staff in social care settings

These studies outline dementia training that included staff from healthcare disciplines working in social care including residential, nursing homes and day centre services.

High-quality studies (n = 6)

Clinical expert delivery models (n = 3). These small studies evaluated interventions delivered by occupational therapists, academic nurses

and clinical pharmacists. McKay et al. [53], in a controlled study, tested a nine-week, occupational therapy-facilitated training programme, teaching continuing care retirement community staff (nurses, social care and other professionals) strategies to engage clients in meaningful activities. Compared to the active control condition, those allocated to the intervention improved in relative mastery (Relative Mastery Measurement Scale [RMMS]; $p < 0.05$) and team development scores (Team Development Measure [TDM]; $p < 0.05$) (level 2). Participants reported providing more PCC in qualitative interviews (level 3) [53].

Researchers in Ireland developed the Rationalising Antipsychotic Prescribing in Dementia (RAPID) intervention for nursing home staff and GPs, to reduce inappropriate antipsychotic prescribing. GPs received training on assessment and treatment of behavioural and psychological symptoms of dementia, and an antipsychotic deprescribing algorithm from a pharmacist. Three months after the programme, prevalence of antipsychotic receipt by residents decreased without substitution for other drugs or worse clinical outcomes (44 % to 36 %; not statistically compared due to small sample). Four GP participants reported that the programme was useful and well-suited to their busy schedules [54].

Finally, a Canadian study evaluated a 2.5-hour workshop delivered by academic nurses for nurses and support workers in hospitals and long-term care facilities on therapeutic lying in the context of PCC. Participants' sense of competence (SCIDS; $p = 0.24$), or attitude towards lying to people with dementia (bespoke measure; $p = 0.44$) did not change post-intervention [55].

Lived experience expert delivery model ($n = 1$). A Canadian study evaluated an eight-hour, asynchronous online training then a storytelling session and talking circle with elders from indigenous communities on dementia and nursing care. Fifteen nurses who received training applied more culturally-safe care plans (measured using a vignette) (level 3), and reported increased hope (ADQ; mean score changed from 28.27 to 31.73), and self-perceived knowledge of cultural safety ($p < 0.01$) [56].

Self-directed asynchronous model ($n = 1$). Williams [57] evaluated Changing Talk Online (CHATO) in adult day services. The online training included three one-hour modules on effective communication, completed over four weeks. Modules asked participants to identify instances of "elderspeak" in video clips as part of the training. Nineteen participating adult day service staff improved in knowledge (self-perceived measure; mean difference = 15; $p < 0.001$), confidence (CODE; mean difference = 1.9; $p = 0.037$) and recognition of elderspeak communication (self-perceived measure; $p = 0.025$).

Train-the-trainer model ($n = 1$). In a single group evaluation in Hong Kong, residential and community care staff were trained to deliver PCC-focused training. The training included 12, two-hour training sessions for groups of around six learners over six months using case sharing, group discussions and reflective exercises. After twelve months, participants' scores on knowledge (Dementia Knowledge Assessment Scale [DKAS]; $t = 20.4$; $p < 0.001$), attitudes towards dementia (DAS; $t = 26.6$; $p < 0.001$), sense of competence (SCIDS; $t = 21.4$; $p < 0.001$) and job satisfaction (Satisfaction with Nursing Care and Work Assessment Scale [SNCW]; t for facilitators = 4.8; t for learners = 14.6; $p < 0.001$) increased in facilitators and learners (level 2) [58].

Lower quality studies ($n = 13$, Table S3). Lower quality study evidence aligned with higher quality evidence. A self-directed online 5.5-hour course on psychosocial interventions improved neuropsychiatric symptoms in people with dementia (level 4) [59]. We identified level 2 and 3 evidence for a two-year, monthly interactive PCC training [60], an online five-hour course on management of challenging behaviours [61], and twelve-session online PCC courses delivered by dementia experts [62,63]. In these studies, healthcare staff from different background implemented suggested behavioural approaches [60–63].

We also found level 2 evidence which showed they improved knowledge, attitudes and confidence in care for: a twelve-hour online TTT training [64], a one-hour in-person course covering communication strategies by a speech pathologist [65], an online six-session course on communications and managing emotions [66], ECHO [67], and VOICE [68].

Summary of higher quality evidence.

- One small, controlled study reported that a nine-week, occupational therapy-derived training programme, facilitated by an occupational therapist improved level 3 and 2 outcomes.
- In small, single group studies, immediately after intervention delivery: a pharmacist-led intervention reduced GP antipsychotic prescribing; asynchronous online learning combined with a storytelling group led by indigenous elders increased nurses use of culturally safe care plans, hope and knowledge about cultural safety; and an interactive self-directed learning intervention reduced elderspeak in daycare service staff.
- A TTT programme enhanced staff knowledge and confidence up to 12 months after delivery of a training package comprising 12, two-hour small group sessions over six months to residential and community care staff in a single group study.

Interventions for mixed/ secondary care health staff

High-quality studies ($n = 6$)

Tele-mentoring models ($n = 2$). Two studies evaluated *Extension for community healthcare outcomes (ECHO)*, a tele-mentoring model previously demonstrated to improve staff and patient-related outcomes in an RCT [69]. Fernandez et al. [70] evaluated an ECHO programme for community clinicians (mainly family medicine residents), comprising eleven monthly one-hour zoom sessions delivered by an expert interdisciplinary panel (geriatrician, geriatric psychiatrist, nurse practitioner with geriatric expertise, geriatric pharmacists, and a social worker) to medicine and psychiatry residents (doctors) and physician assistants. Each session involved a 20-minute didactic presentation, 30-minute clinical case presentation, group discussion, then a 10-minute update on the previous month's case. The proportion of clinicians intending to change their prescriptions based on the sessions meetings increased during the intervention period (level 3) (self-perceived measure; $p = 0.04$) [70]. Clark et al. [71] adapted ECHO for health and social care professionals working with older adults with Intellectual and developmental disabilities (IDD) in residential, primary care, community and academic settings. They evaluated ten one-hour sessions of didactic and case study discussions on IDD and dementia over twelve months. In 145 primary and community professionals recruited from over 20 organisations, knowledge of dementia improved (self-perceived measure; beta = 0.69, 95 % CI: 0.23 to 1.15) after training delivered by the Hub team (partnership between academic institutions, community organizations, and service agencies) (level 2) [71].

TTT model ($n = 1$). Dementia Education And Learning Through Simulation 2 (DEALTS2), is a simulation toolkit commissioned by Health Education England (HEE). It comprises a fully structured course, deliverable in a single, four-hour session to small staff groups, covering dementia risk reduction, PCC, scenarios for experiential learning; and a one-day TTT course. Heward et al. [72] delivered the DEALTS2 TTT course to 199 dementia trainers in hospital and community settings. In qualitative interviews, trainers noted improvements in clinical practice and empathy in trained staff [73] up to nine months after the TTT course. Participants' knowledge (self-perceived 5-point Likert scale) improved after training ($p < 0.001$) in all areas (dementia risk factors, lifestyle changes to reduce risk, person-centred approaches, communication and interaction, humanised approaches, and signposting to sources of support) with most maintained for up to a year. Improvements in confidence was also maintained over a year [72].

In-person or online lecture-based (didactic) models ($n = 2$). Cotter et al. [74] developed a one-hour programme to train healthcare professionals in ACP, online or in-person. It increased staff knowledge (self-perceived measure; $p = 0.002$), and confidence discussing ACP (developed measure; $p = 0.03$), and belief it can improve outcomes (developed measure; $p = 0.03$) immediately after the presentation. Documentation of advance directives (13.6% to 19.7%; $p = 0.04$) and medical orders for life-sustaining treatments increased (11.0% to 19.0%; $p = 0.006$) [74]. Secondly, a one-day large group, didactic workshop for healthcare professionals in Ghana, on Alzheimer's disease symptoms and management was associated with increased scores of participants on the ADKS (mean [SD]_{pre} = 19.8 [4.3]; mean [SD]_{post} = 23.2 [4]) [75].

Arts-based intervention models. A UK, visual arts programme for family and professional carers from care homes and dementia care services included twelve, two-hour weekly sessions of art viewing and making with people with dementia. Qualitative interviews with professional carers showed that the programme helped them see the capabilities of the person with dementia, but quantitative outcomes did not reflect this (ADQ; $p = 0.99$) [76].

Lower quality studies ($n = 2$). One study evaluated a series of three in-person two-hour workshops on clinical updates in dementia-related behaviours and principles of knowledge translation [77], and the other investigated a two-hour online on sleep improvement [78]. Both short online courses were delivered to direct care and support staff from residential, community, respite, acute and primary care settings and changed practices of care (self-reported) and improved perceived quality of care.

Summary of higher quality evidence.

- In two single group studies, **tele-mentoring** with staff champion support for community-based doctors increased self-reported change in prescribing (level 3), and a programme for health and social care professionals working with people across settings with intellectual disability and dementia improved knowledge (level 2), each evaluated after 12 months of the programmes.
- There was level 2 evidence from a single group study that DEALTS2, a **TTT programme** was noted by trainers to improve empathy in care.
- In small, single group studies evaluating **lecture-based (didactic) models**, an intervention to train HCP in ACPs increased their use (level 3), and a didactic educational workshop increased knowledge of dementia (level 2).

Stakeholder consultation

We consulted eight healthcare professionals from nursing, occupational therapy, general practice, and psychiatry backgrounds, working in primary, secondary and community settings.

We identified four key themes in response to RQ3.

“Time and resources: The group considered time to train and be trained a major limiting factor to implementing the training models discussed. Referring to the minimum intervention duration presented (3 h), one member commented it was “unlikely that GPs have that much time to train in one area”; another that “wards may become short-staffed if multiple members are busy in training”. **Fit with existing knowledge transfer structures:** Attendees noted that mandatory training programmes rarely related specifically to dementia skills that professionals were expected to learn during training and maintain through self-directed Continuing Professional Development (CPD). A stakeholder commented (considering TTT interventions) that “the Champion model would be useful to integrate into existing structures for transfer of knowledge.” **Considering modality:** Group members valued group, in-person training as providing

opportunities for sharing experiences but commented that “the option of online training increases accessibility”. **Tailoring to different professional roles:** TTT models were valued as enabling tailoring to skill mixes and other local contexts. A group member commented that “associate physicians for example, would benefit from skill-based learning”.

Discussion

Priority evidence supported a TTT team-based reflective practice intervention, which improved primary care nurses' and doctors' learning (level 2), and self-reported staff practice (level 3) over ≥ 3 months [22]. Other higher-quality controlled studies which improved outcomes post-intervention supported: a TTT programme for hospital staff which improved client outcomes (agitation) over ≤ 5 days (level 4) [33]; an expert-led 2-day interactive training for inpatient nurses [37]; and an expert-led, 9-week, occupational therapy-derived training programme for retirement community employees [53].

Successful interventions included lived experience perspectives, experiential learning, case-based and reflective group discussions: learning strategies that reflect recommendations of the previous review [9]. Identified evidence extended the previous recommendation [9,79] that interventions required at least half a day with a “knowledgeable, skilled and experienced facilitator who is also an experienced clinician or practitioner”; our findings also support TTT models, which can increase reach and be tailored to local contexts. Interestingly, an intervention for hospital nurses that involved only 3 h of direct sessions but additional support for implementation from trained staff champions was effective [33], so perhaps TTT models can improve the utility of brief training interventions. This reflects findings that, if well supervised and supported, non-clinically trained facilitators can facilitate dementia training, indeed consciously taking a non-expert role can create a positive dynamic of collaborative enquiry [7].

Most evidence identified pertained to training doctors and nurses; this does not reflect the diversity of healthcare professionals caring for people with dementia. In the UK, staff without professional qualifications comprise almost half of hospital and community healthcare staff [80]; this group have different learning needs from those who are professionally qualified, an important evidence gap. While team-based learning can be effective, role-specific needs must also be met for effective care.

No evidence from high-quality, controlled studies supported self-directed, or didactic training models, echoing previous recommendations to avoid these [79]. E-learning is relatively easy to resource; its use burgeoned in the pandemic. Perhaps there is scope for developing interactive and effective self-directed formats, supported in small, single group studies [57]. Though one study found in-person was more effective than online training [24], this is not always practicable and offering a choice of online or in-person seems pragmatic [23,24].

We considered how this international evidence might apply to the English context (RQ4). Identified evidence-based interventions aligned well with English policy drivers, for example including lived experiences and promoting team-based learning; stakeholders valued opportunities TTT models provided to tailor evidence-based training to local contexts and group, in-person training to share experiences. A recent review discussed international dementia training standards and barriers to their implementation. These included low access to relevant training, staff literacy, funding, high staff turnover, ineffective past training, and inconsistent service delivery [81]. Effective TTT programmes could address many of these barriers, through providing consistent, accessible training; and opportunities to train peers that might increase staff retention.

Major review limitations include the heterogeneity of interventions and outcomes, which limited interpretation and precluded meta-analysis. Developing a relevant core outcome set would benefit this field.

As service models vary, what works in one national context may not fit well within another. Cost-benefits of the interventions reviewed are yet to be evaluated.

Our findings support expert or TTT delivery of interventions that are interactive, rooted in case-based discussions, and preferably delivered to groups in-person. Cost-effectiveness studies could guide service leader and policymaker decisions around funding dedicated training time. Developing and rolling out evidence-based training, tailored to national contexts would ensure that people with dementia receive care that is respectful, high quality and equitable.

CRedit authorship contribution statement

Kenten Charlotte: Writing – review & editing, Conceptualization. **Akhlaq Raouf Mohammed:** Writing – review & editing, Conceptualization. **Birks Yvonne:** Writing – review & editing, Conceptualization. **Harrison Denning Karen:** Writing – review & editing, Conceptualization. **Giebel Clarissa:** Writing – review & editing, Conceptualization. **Banerjee Sube:** Writing – review & editing, Conceptualization. **Muralidhar Malvika:** Writing – review & editing, Investigation, Formal analysis. **Delray Saskia:** Writing – review & editing, Methodology, Investigation, Conceptualization. **Zabihi Sedigheh:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Cooper Claudia:** Writing – review & editing, Supervision, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Walpert Madeleine:** Writing – review & editing, Investigation, Formal analysis, Conceptualization. **Rachael Hunter:** Writing – review & editing, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.inpsyc.2025.100088](https://doi.org/10.1016/j.inpsyc.2025.100088).

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