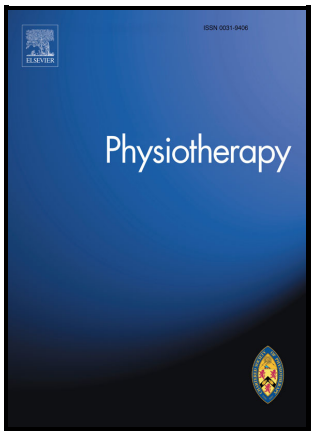
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Education and training interventions for physiotherapists working in dementia care: a scoping review



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Title Page

Education and training interventions for physiotherapists working in dementia care: a scoping review

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Abstract

Objectives Physiotherapy plays a key role in many aspects of dementia care, most notably in maintaining mobility. However, there is a lack of dementia care training at undergraduate and postgraduate level, and more importantly, a paucity of evidence as to what constitutes effective dementia education and training for physiotherapists. The aim of this scoping review was to explore and map the evidence, both quantitative and qualitative, relating to education and training for physiotherapists.

Design This scoping review followed the Joanna Briggs Institute methodology for scoping reviews. A chronological narrative synthesis of the data outlined how the results relate to the objectives of this study.

Setting All studies, both quantitative and qualitative on dementia education and training conducted in any setting, including acute, community care, residential or any educational setting in any geographical area were included.

Participants Studies that included dementia education and training for both qualified and student physiotherapists were considered.

Results A total of 11 papers were included in this review. The principal learning outcomes evaluated were knowledge, confidence, and attitudes. Immediate post- intervention scores showed an improvement in all three outcomes. The Kirkpatrick four level model was used to evaluate the level of outcome achieved. Most educational interventions reached Kirkpatrick level 2, which evaluates learning. A multi-modal approach, with active participation and direct patient involvement seems to enhance learning.

Conclusions Allowing for the heterogeneity of intervention design and evaluation, some common components of educational interventions were identified that led to positive outcomes. This review highlights the need for more robust studies in this area. Further research is needed to develop bespoke dementia curricula specific to physiotherapy.

Contributions of the Paper:

- This review highlights the need for further research to develop bespoke dementia curricula specific to physiotherapy.
- Educational interventions need to go beyond evaluating learning and knowledge and measure changes in participants' behaviour and outcomes for patients.

Key words: Physiotherapy, Dementia, Education, Training

Introduction

Dementia is one of the greatest health and social care challenges of our time [1]. Dementia is an umbrella term for several progressive diseases, affecting memory, behaviour, language, orientation,

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judgement and with a person's ability to carry out everyday activities [2]. Approximately 50 million people worldwide live with dementia, and this number is projected to rise to 152 million by 2050 [3]. With a rapidly growing older population internationally, the economic costs of dementia for governments, communities, families, and the individual continues to grow.

Physical impairments associated with dementia include loss of mobility, diminished postural control and reduced muscle strength, which in turn can lead to an increase in falls, hip fractures and frailty [4, 5]. People with dementia are five times more likely to fall than their cognitively intact peers [6]. Their falls are also more likely to cause injury [7] and where an injury is sustained, people with dementia are less likely to make a full recovery. Physiotherapy can play a key role in many aspects of dementia care, including strength training, balance re-education, falls risk reduction, post fracture rehabilitation, as well as end-of-life care [5]. Physiotherapists have reported carrying a significant caseload of people with dementia in both the acute and community setting [5].

Echoing recommendations from international and national guidelines, education and training has been recommended for all health care professionals working in dementia care [2, 8, 9]. Despite their significant dementia workload, physiotherapists have reported a lack of dementia care training or bespoke programmes at undergraduate and postgraduate levels [5]. In order to design dementia educational programmes for physiotherapists, it is therefore important to analyse the curricular components of effective educational interventions from across the health-professionals spectrum. A systematic review of the key features of effective dementia training for the health and social care workforce found that active participation, experiential learning, and training that is applicable to the participants' clinical role were features that enhanced learning [10]. Many dementia educational interventions have been criticised for just focusing one or two levels in the Kirkpatrick model, and not examining the interplay between levels [10]. The Kirkpatrick model is a globally recognized method of evaluating the results of training and learning programs, rating them against four levels of

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evaluation: reaction, learning, behaviour, and results [11]. The first level refers to the learner's response to the training experience, and how they rated it. The second level measures how much knowledge and/or skills the learner has acquired, usually via a pre/post-test [12]. The third level measures learner behaviour or performance post learning, i.e. whether the learning transferred into clinical practice. The final level four, which is the most difficult level to capture, measures the training impact i.e changes in patient outcomes or financial impact.

Previous research to date on dementia education and training has predominately focused on inter-disciplinary training for the wider health and social care workforce [10, 13, 14]. However, there remains a paucity of evidence as to what constitutes effective dementia education and training for physiotherapists, and more importantly, what type of curriculum will translate into improved patient outcomes [15]. Physiotherapists need guidance on specific and targeted interventions, in particular with regard to optimising motor learning capabilities when working with people with dementia [16]. A recent Canadian study [17] found that positive attitudes of physiotherapists who work in dementia care was related to receiving more dementia specific education. Another study [5] which sought to identify dementia-specific educational needs of physiotherapists, found that specific areas of education need included use and interpretation of cognitive screening tools as well as enhanced communication strategies.

A preliminary search of Medline and CINAHL databases, as well as the JBI Database of Systematic Reviews and the Cochrane Library found no scoping review of dementia educational interventions for physiotherapists. Similarly, a search of the PROSPERO database found no similar systematic review protocol registered or currently ongoing.

The aim of this scoping review is therefore to explore and map the evidence relating to education and training for physiotherapists working with people with dementia.

Objectives:

- To identify empirical studies that have evaluated dementia educational interventions for physiotherapists.
- To map the evidence relating to the content and mode of delivery of the education interventions.
- To determine what methods of evaluation were used and what level of evaluation was reached in the educational interventions, using the Kirkpatrick model.

Methods

This scoping review followed the Joanna Briggs Institute (JBI) methodology for scoping reviews [18]. The review was registered with Open Science Framework (https://osf.io/m68d3) and the protocol was published in March 2021 [15].

Inclusion criteria

Population

This scoping review considered studies that included dementia education and training for both qualified and student physiotherapists. It also included studies that examined dementia education and training for the wider healthcare team if physiotherapy was an included profession.

Concept

All empirical studies with a focus on any aspect of physiotherapy dementia education and training were included. This included both quantitative and qualitative studies. Case reports, case series, narrative reviews and editorials were all excluded. The justification for this was that the authors evaluated the educational interventions using Kirkpatrick's model and therefore only empirical studies

were included. The authors were guided by the Cochrane Effective Practice and Organisation of Care Group (EPOC) which reviews the effects of knowledge translation activities [19]. The authors ensured the included studies met the definitions of educational interventions as outlined by EPOC.

Context

In order to establish the breadth and extent of the current literature published on dementia education and training, studies conducted in any setting, including acute, community care, residential or any educational setting in any geographical area were included.

Data sources and searches

As recommended in the JBI guidelines, a three-step search strategy was used [18]. Step one involved a broad search of Medline (via EBSCO) and CINAHL using keywords for physiotherapy, dementia and education. The second step analysed the text words found in the identified titles and abstracts. A second search using all identified keywords was then undertaken across the following databases: Medline, CINAHL, PsycINFO and SocINDEX. Google Scholar and Open-Grey were searched for grey literature, from inception until February 2021. The final step included a search of the reference lists of included papers. Only studies published in English were considered. This search was conducted by one author (TOS) with assistance from a senior librarian in University College Cork. The use of CINAHL headings and MeSH headings were used to expand subject headings. Synonyms were identified to express the key concepts. The faculty senior librarian/information specialist was consulted at both the development of the search strategy and the concept table. The final search strategy for CINAHL is presented in Table 1.

Table 1. Search Strategy: CINAHL plus full text.

Number	Search Terms	Records Retrieved
#1	Physiotherapy or Physical Therapy or Physiotherapist or	124,447

	Rehabilitation	
#2	Dementia or Alzheimer's Disease or Cognitive Impairment or Dementia Vascular or Memory Loss	91,389
#3	Education or training or learning or teaching	420,523
#4	#1 and #2	2,589
#5	#4 and #3	399

Study Selection

Identified references were collated using EndNote (version X9) and duplicates were removed. Article titles were initially screened by one author (TOS) and reasons for exclusion noted. Articles were then uploaded to Rayyan [20] where two authors (TOS and TF) independently reviewed title and abstracts as recommended [21]. Any disagreements between authors were resolved through discussion with a third author (JMcV). Further screening for eligibility was conducted by full text review, applying the full inclusion/exclusion criteria.

Data Extraction

Data extraction was performed using a data extraction tool based on the JBI data extraction tool [18]. Data extracted included: author, year, country, study design, study population, intervention (development and content), mode of delivery, method of evaluation, level of impact assessed, as per the Kirkpatrick model, and results.

The data extraction tool was piloted on two papers that used different methodological approaches and was modified to capture the level of impact using the Kirkpatrick model more accurately. Data was extracted for all studies by one author (TOS) and checked by another author (TF) for accuracy. Any discrepancies were resolved by consulting a third author (JMcV).

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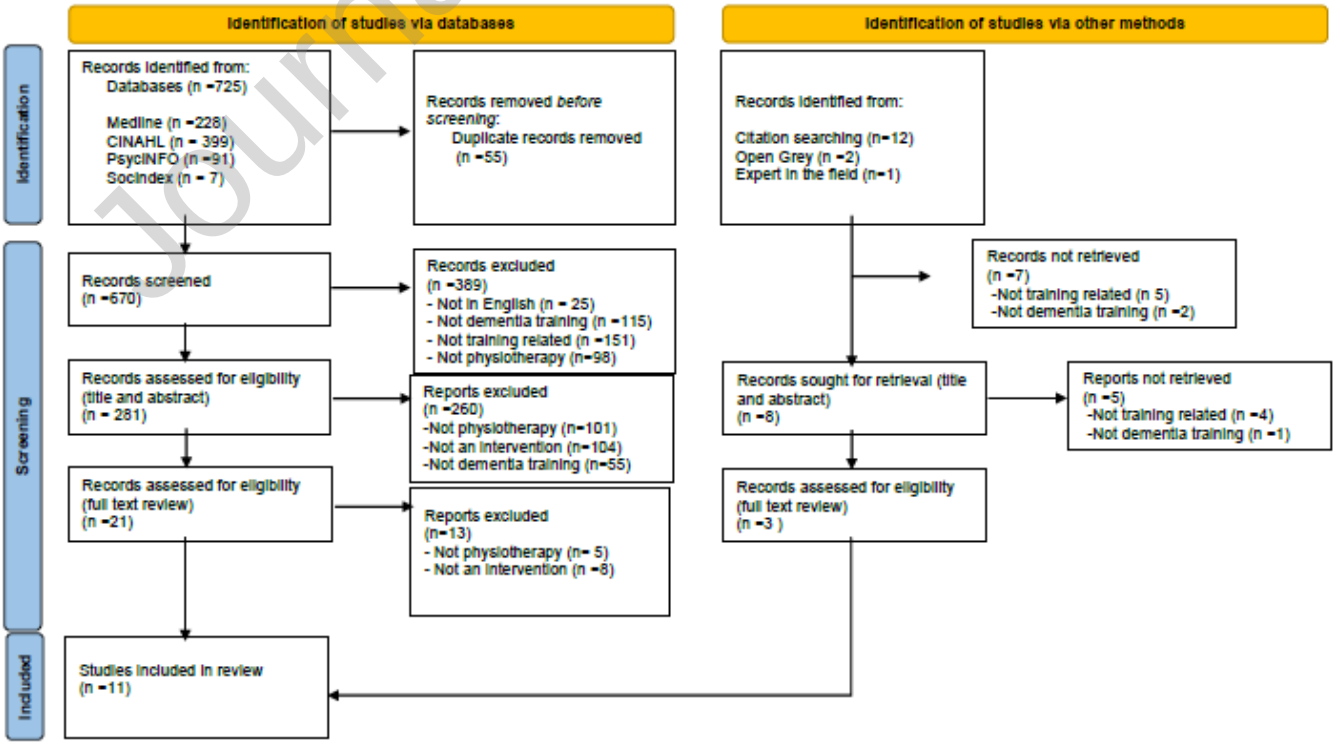
Data Synthesis and Analysis

Data was classified under the conceptual categories: development of educational intervention, mode of delivery, content of educational intervention, and impact of the intervention. Using the Kirkpatrick model, the interventions were mapped against the level of outcome which was achieved in the study. The data were presented in tabular format and synthesised narratively.

Results

The database searches initially identified 725 articles. After removing duplicates, 670 articles underwent initial screening of title by a single reviewer (TOS), of which 389 articles were removed. The remaining 281 articles were potentially eligible for inclusion and were screened by title and abstract, independently, by two authors (TF and TOS). Of these, 21 articles underwent full text review by the two authors, resulting in 11 articles being selected for inclusion. The Prisma flow diagram is presented in Fig 1.

Fig 1 Prisma Flow Diagram



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Description of studies

Six of the included studies were conducted in the United Kingdom [14, 22-26], three were conducted in the United States of America [27-29], and one each in Ireland and Australia [30,31]. The most common study design was a simple observational pre-post study design [14, 22-25, 27-29, 31], with one study adopting a mixed methods study [30] and one being an exploratory study [26]. Most studies were published in the last 10 years [14, 22-30]. Five studies explored educational interventions that took place in a hospital and care home environment [14, 22, 23, 29, 31], with one study based in the primary/community care setting [30]. Four studies explored educational interventions in higher educational institutes, with two of these involving a post-graduate student cohort and two an undergraduate student cohort.

Participants

The total number of participants across all studies was 1,633, of which 187 were physiotherapists. The remaining participants represented nurses, occupational therapists, speech and language therapists, health-care assistants, general practitioners, pharmacists, and social workers. Nine studies [14, 22-26, 29-31] included an inter-disciplinary population, within which physiotherapists were represented. Two studies focused on educational interventions for student physiotherapists [27, 28]. Five studies [14, 22, 25, 26, 29] did not specify how many physiotherapists participated in the intervention, instead including physiotherapists within an overall 'allied health care professionals' number.

Development of Educational Intervention

Factors influencing the development of the educational interventions varied across the studies. Six studies [14, 22, 24-27] reported reviewing the literature before designing the educational intervention. Three studies [29-31] were guided by an educational needs analysis of staff including physiotherapists working with people with dementia. One study [24] conducted a scoping exercise to review the dementia content in the curricula of all heath care professional courses, including BSc (Hons) Physiotherapy programmes within the higher educational institute in which the educational intervention was being developed.

Three studies [27, 39, 30] were guided by published policies, recommendations, and guidelines,

which outlined best practices and competencies in dementia care management. One study [30] used recommendations on the core competencies of inter-professional education training programmes for dementia [32] to guide the development of the educational intervention.

Some studies based their educational intervention on learning theories and models [23, 25]. Theories included the experiential learning theory with a focus on learning in action and Bigg's constructive alignment in the context of work-based learning. Table 2 presents an overview of the development of educational interventions of the selected studies.

Mode of Delivery

Most studies adopted a multi-modal approach to the delivery of the educational programme [14, 22-30], with one study [31] opting for a single mode of delivery in the form of a face-to-face didactic educational session. Modes of delivery of the educational programmes included: didactic [14, 22-25, 27-31], interactive workshops [14, 22-25, 29, 30], group learning [14, 22-25, 27, 29, 30] role-playing [28], use of multimedia [14, 22, 23, 30], virtual reality [26, 27], patient involvement [23, 24, 27] and use of simulated patients [25]. Some educational interventions were delivered over two days [23, 25] while others were a stand-alone workshop [29, 30]. The average duration of programmes was 8.3 hours. Table 2 gives an overview of the modes of delivery used in each study.

Content of Educational Intervention

Most studies [14, 22-25, 27, 30, 31] began with a general overview of dementia, including types of dementia, diagnosis, and presentation. Most studies [14, 22, 24, 25, 27-30] placed strong emphasis on optimum communication strategies in caring for the person with dementia. Delirium was also taught and discussed in group sessions in some studies [23, 29-31], while environmental factors, particularly the impact of a hospital environment for a person with dementia, was outlined [14, 22, 23, 31]. The importance of a person-centred approach and multi-disciplinary team input was highlighted by many studies [14, 22-24, 27, 29, 30], while the process of implementing practice change was discussed in some [23, 31]. Table 2 gives an overview of the educational content of each intervention.

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Table 2: Development, Content and Mode of Delivery

First author, year and country	Development of Intervention	Content of Educational Intervention	Mode of Delivery
1) Elvish (2014, UK)	Literature review plus identifying staff needs through use of focus groups	Introduction to dementia, seeing the whole person, communication, impact of hospital environment, person centred care (pcc)	Multi-modal: power-point presentations, video clips, classroom training
2) Elvish, (2018, UK)	Literature review plus identifying staff needs using focus groups, and reflection on the Elvish, 2014 study	Introduction to dementia, seeing the whole person, communication, impact of hospital environment, pcc	Multi-modal: power-point presentations, video clips, classroom training
3) Jennings, (2018, Ireland)	Educational needs analysis conducted by expert reference group. Guided by core competencies of Inter-professional education training programmes for dementia and by interviews with GP's, people with dementia and their carers	Professional roles and responsibilities, team collaboration, knowledge (with a focus on diagnosis), inter-professional communication skills (particularly in advanced care planning)	Multi-modal: power-point presentations, face to face case-based discussions, video clips
4) Lorio, (2016, USA)	Literature review plus guided by competencies developed by the American Physical Therapy Association Section on Geriatrics (AGPT)	Introduction to dementia, behaviour changes associated with dementia, basic components of a physiotherapy assessment, management at different stages.	Multi-modal: didactic lectures, experiential labs including a virtual dementia tour (VDT) (dementia simulation) activity, patient interaction, interactive book club discussion (reviewing "Still Alice")
5) Teodorczuk (2014, UK)	Using a grounded theory qualitative study, 8 specific learning needs were identified. This included negative attitude, recognition of cognitive impairment. Also identified sociocultural barriers underpinning the learning need	Overview of the three "D"'s (dementia, delirium and depression), person centred care, learning from patient and carers, recognising confusion, treating delirium, environmental factors and practice change.	Multi-modal: videos, patient interaction, group work
6) Wood (2016, UK)	Scoping exercise to review the dementia content of the curricula of all pre-qualifying health programs at Kingston and St George's University of London, plus literature review on dementia specific programs for pre-qualifying health-	General overview of dementia, examples of communication strategies, understanding behaviours that challenge, key aspects of the Mental Capacity Act, effects on carers. Key focus on communication skills. Patient observation in	Multi-modal: online, didactic, workshops, classroom training, care-home experience (volunteer work)

		care students.	care home	
7)	Mullen (2018, USA)	Analysis of feedback from students who completed the "Geriatrics and Orthopaedics" module in the University of Missouri	Methods to improve communication	Multi-modal: lecture and blinded role play laboratory simulation (to demonstrate excessive verbal instruction in administering the timed up and go test)
8)	McPhail (2018, Australia)	Dementia survey among staff who might receive the education	Overview of dementia, delirium, depression, behaviour management, medications, sedation policy, ageism, sexual dis-inhibition, social management in acute care.	Face to face education sessions.
9)	O'Brien (2018, UK)	Used conversation analytic findings from findings of HCP's talking to pwD in the acute hospital. Systematic review of evidence surrounding dementia communication skills training plus expert and service user opinion	Overview of dementia, person-centred care, communication skills.	Online learning modules, documentary of pcc that attendees watched before course, simulation of interaction with PwD using actors, reflective diary
10)	Adefila (2015, UK)	Literature review, plus collaboration with dementia experts to identify common features of dementia which could be simulated. Prototype was developed and trialled by 14 students prior to use.	The experience of living with dementia in everyday life	Virtual reality: given instructions to explore a simulated flat. Tasks included: making a cup of tea, emptying the bin, having a shower, watching TV. Age related filters were present, auditory sense was also impaired. Used "think aloud" technique where students could reflect as they interacted.
11)	Galvin, 2019, USA)	Program content ideas developed from the John A. Hartford Institute for Geriatric Nursing publications, plus National Alzheimer Association publications, plus focus groups of staff working in rural and urban hospitals.	Overview of dementia, medical overview, approaches to communication and behaviour, dementia friendly care (safety interventions, falls, pain assessment, nutrition), connecting the care-giver, overview of screening tools for assessing patients, both	Didactic lectures, group learning, case study reviews. Each module was delivered by a specialist in that area: example a physician delivered the medical overview module.

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	informant-based such as the AD8,20 and performance measures such as the Mini-Cog 21.

Outcome Measures

The principal learning outcomes that were evaluated were knowledge, confidence, and attitudes.

Knowledge

Eight studies [14, 22-25, 27, 29, 31] measured knowledge pre and post educational intervention. One study used a 120-day delayed post-test [29], while another study [24] measured knowledge at four time points: baseline, immediately after the main educational intervention, after the patient interaction component and six months later.

Confidence

Nine studies [14, 22-27, 29, 30] measured confidence pre and post educational intervention. Similar to measuring knowledge, some studies developed their own outcome measurement for assessing confidence, using outcome measures purposively designed to evaluate the intended outcomes of the educational intervention.

Attitudes

Three studies [23, 29, 31] evaluated the attitudes of participants. One study which developed, implemented, and evaluated a training program across four community hospitals, developed a five-point Likert scale and assessed areas such as the perceived value of family member input, opinion on admission procedures and difficulties encountered in dementia care [29]. Another study [23] evaluated changes in attitude by examining free-text comments in the evaluation and reviewing posters that were produced by participants.

Communication

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Two studies measured communication skills. One study [28] measured, pre and post-intervention, the number of words used by a participant when giving instructions for a timed-up and go test in a simulated patient interaction scenario. Another study [25] developed a checklist to assess communication behaviours in video recordings of participants, as well as using a dementia communication knowledge test based on a Likert scale.

Outcome of the intervention

Most studies undertook evaluation at Kirkpatrick level 2, which means that participants acquired the intended knowledge, skills, attitudes, and confidence because of the training. Two studies [25, 28] reported to have undertaken evaluation at Kirkpatrick level 3, which means that the training led to changes in the behaviour of participants.

Knowledge

Of the eight studies that tested knowledge, seven studies showed an improvement in knowledge scores immediately post educational intervention [14, 22-25, 29, 31]. One study [27] showed no significant change in knowledge post intervention but cited a ceiling effect of the outcome measurement evident by high pre-intervention scores. Acquired knowledge in dementia was retained in the two studies who retested at four and six months respectively.

Direct patient involvement, where people with dementia taught components of the intervention or where the intervention included direct contact with a person with dementia, were perceived to improve knowledge. Other components that were perceived to improve knowledge included immediate feedback provided and being able to practice the skills learned [25], as well as virtual reality [26, 27] and reflective practice [23].

Confidence

All nine studies testing confidence in dementia reported an increase in confidence post intervention [14, 22-27, 29, 30], with two studies reporting a clinically meaningful change in results, (95% bootstrap confidence interval) [14, 22]. Furthermore, these positive changes in confidence were

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sustained in the follow-up testing in these two studies at four and six months.

Attitudes

All three studies that evaluated attitudes showed positive improvements [23, 29, 31]. This was captured by some qualitative comments in the post-intervention evaluation [31]. More positive attitudes led to behavioural changes at ward level [31], with improved knowledge leading to participants being able to adopt effective strategies to support people with dementia.

Communication

Outcomes used to measure how health care professionals communicated with people with dementia varied considerably between studies. Communications skills improved most when participants got immediate feedback after a communication session [25]. Having the opportunity to watch others undertake communication tasks, as well as interdisciplinary learning was also valued [25].

Table 3: Level of Outcome and Method of Measurement

Level of Outcome using Kirkpatrick Model	First Author (country, year, publication)	Method of Measurement	Results
Knowledge (Kirkpatrick Level 2)	Elvish (UK, 2014) (1) Elvish (UK, 2018) (2) Lorio, (USA, 2016) (4) Teodorczuk (UK, 2014) (5) Wood (UK, 2016) (6) McPhail (Australia, 2018) (8) O'Brien (UK, 2018) (9) Galvin (USA, 2019) (11)	Knowledge In Dementia Scale (KIDE)(1,2,4,) 16 item self-reported questionnaire -agree/disagree scale Examination of free text comments in post intervention evaluation (5) True/False knowledge questionnaire developed by authors (20 questions) (6) Test of medical knowledge about dementia developed by authors(8,9,11),	KIDE (1): Levels of knowledge higher immediately after training ($p < 0.001$) Median difference =1 KIDE (2): Levels of knowledge higher immediately after training ($P = < 0.001$) Median =14 KIDE (4): no significant change ($p = 0.604$) Course evaluation and posters (5) showed positive changes in knowledge Knowledge scores increased post introductory programme ($p < 0.001$) with increases retained after six months ($P < 0.001$) (6) 63% of participants reporting improvement in knowledge and

			understanding in dementia (8) Increased in knowledge of dementia knowledge communication ($p < 0.001$) (9) Knowledge scores improved ($p < 0.001$)(11)
Confidence (Kirkpatrick Level 2)	Elvish (UK, 2014) (1) Elvish (UK, 2018) (2) Jennings (ROI, 2019 (3) Lorio, (USA, 2016) (4) Teodorczuk (UK, 2014) (5) Wood (UK, 2016) (6) O'Brien (UK, 2018) (9) Adefila (UK, 2015) (10) Galvin (USA, 2019) (11)	Confidence in Dementia Scale (CODE) (1,2,4,9) - 9 item self-reported questionnaire.	CODE confidence levels were higher immediately after training ($P < 0.001$) Median difference =6 (1) CODE confidence levels were higher immediately after training ($P < 0.001$) Median difference =7(2)
		Post course evaluation developed by authors (3)	CODE showed increases in confidence ($p < 0.001$) (4)
		Pre/post course questionnaire developed by authors (5)	CODE showed improvement in confidence; mean improvement of 5.5 (95% CI 4.1-6.9) (9)
		5 item questionnaire (6) designed specifically to evaluate the intended outcomes of the intervention.	80% of participants cited increase in confidence in post course evaluation (3) Increased confidence in post intervention evaluation (5)
		Self-perceived confidence questions developed by authors (10) - 6 item self-reported questionnaire developed by authors that examined confidence and attitudes (11)	Confidence scores increased after introductory programme ($p = 0.01$); small decline at 6 months ($p = .25$), but still higher than baseline (6) Improved confidence post test (mean=5.75, SD 2,61) (10) Perceived increase in confidence, that was retained in a 120-day re-test in 3 out of the 4 hospitals (11)
Attitudes (Kirkpatrick Level 2)	Teodorczuk (UK, 2014) (5) McPhail (Australia, 2009) (8) Galvin (USA, 2019) (11)	Review of posters produced by participants and examination of free-text comments in evaluation (5)	Positive changes in attitudes as seen in posters and free text comments. Deeper understanding of the confused patient and f need to change attitudes and engage with individuality of the patient (5).
		Post course evaluation form that included questions on attitude developed by authors (8)	Qualitative comments in evaluation capturing changes in attitude because of training (8)
		6 item self-reported questionnaire on current	Significant improvement in

		practices and attitudes on a 1-5 Likert scale (11)	attitude post intervention (P < 0.001), not maintained at 120-day re-test in 3 out of the 4 hospitals (11).
Communication (Kirkpatrick Level 3)	Mullen (USA, 2018) (7) O'Brien (UK, 2008) (9)	Post word count activity of participant explaining how to do a timed up and go (7) Dementia communication knowledge test. Checklist developed by authors to assess communication behaviours in video recordings (9)	Decrease in number of words used (p < 0.001) Average word reduction was 50.1% (7) Significant improvement in the dementia communication knowledge test (p = <0.001) (9)

Discussion.

The aim of this scoping review was to explore and chart the evidence relating to education and training of physiotherapists in the management of people living with dementia. The educational interventions and outcome measures used across the studies were heterogeneous, which made analysis difficult. Physiotherapists were often in the minority in the studies, with only two studies focusing on physiotherapy-specific interventions [27, 28].

Echoing previous research [10, 13], the results of this review found that multimodal education interventions seem to lead to more positive outcomes in pre-post evaluation. A strength of some of the educational interventions was the direct involvement of people with dementia. In one study [23], people with dementia taught components of the programme, while another [24] included volunteer visits to care homes. The benefits of patient involvement in medical education has gained recognition in recent years [33]. Patients can take on the role of teacher, as assessor of student's competence as well as making valid contributions to curriculum development [33].

The multimodal nature of the educational interventions made it difficult to identify the specific components of the educational intervention that achieved the best outcomes. Some studies failed to

give a detailed description of the content of the educational intervention. One study [31] merely listed the topics covered, while another study [28] referred to participants reviewing past lecture notes and handouts, with no further detail offered on the content.

Although positive outcomes of educational interventions were reported, all studies included in this scoping review used a pre-post design, including some with a qualitative component; given the methodological limitations of this design, the results can only provide an indicator of the impact of the intervention rather than firm conclusions. It is important to note however, that this type of study design is commonly used in research on educational interventions [34], and not specific to dementia educational research. There was also a lack of longitudinal follow up studies, with only two studies [24, 29] following up at six months post intervention.

The outcomes evaluated most often in the studies included in this scoping review were knowledge, confidence and attitudes, which reflects what is commonly evaluated in medical education literature [35, 36]. However, how these outcomes were measured varied across studies, with many studies using qualitative self-reported or non-validated outcome measures [25, 29-31]. Three studies in this scoping review used the Kirkpatrick Framework to evaluate the results of the dementia education and training programmes [23, 25, 30], with only two studies reaching Kirkpatrick level 3 (behaviour) [25, 28]. The results of this review demonstrate that most educational interventions evaluated their effects at Kirkpatrick level 2 (learning). Previous research has also concluded that evaluation of educational interventions beyond Kirkpatrick level 2 has proven difficult [10, 13].

Only 11% of participants across all studies were physiotherapists and only two studies [27, 28] included only physiotherapists, thus highlighting the under-representation of physiotherapists in dementia education studies. Therefore, it is evident that there is a paucity of physiotherapy-specific

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educational interventions. However, it is important to note that dementia care is inter-disciplinary in nature, and studies show the importance of this inter-disciplinary educational approach [36, 37].

Limitations

This review has a number of limitations. Firstly, only studies published in English were included, which may have led to omissions of some relevant studies. Secondly, scoping reviews do not usually quantify the quality of evidence, nor offer critical appraisal and therefore some of the included studies may have been of a low quality. Indeed, some of the studies had methodological limitations such as poor follow up [26, 30, 31] and small sample sizes [25, 26, 31]. This lack of high-quality evidence justifies our decision to proceed with a scoping review rather than attempting a systematic review de novo.

Implications for Policy, Practice and Research

Policy

This scoping review has highlighted the lack of dementia-specific training for physiotherapists. As recommended by the World Health Organisation [2] and other national dementia strategies [8, 9], universities need to develop bespoke dementia curricula at both undergraduate and postgraduate level which address the needs of physiotherapists working in dementia care, as well as addressing the needs of people with dementia.

Practice

Although most studies in this review implemented an inter-professional education intervention, some novel and useful educational content and modes of delivery were highlighted. The authors acknowledge however, that what constitutes effective dementia education and training for healthcare professionals remains an ongoing area of active research.

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Research

This scoping review has highlighted the need for more effective evaluation of educational interventions in dementia care. An initial step may be the development of validated outcome measures, which not only evaluate learning but also changes in behaviour and the interplay between these two outcomes. Evaluating beyond Kirkpatrick level 2 may ultimately lead to improved patient care and outcomes.

Conclusion

The aim of this scoping review was to explore and map the evidence relating to education and training for physiotherapists. Despite much heterogeneity and some methodological limitations across the included studies, we have identified some common components across the educational interventions that led to positive outcomes. Some novel modes of delivery were highlighted, such as virtual reality, and a multi-modal approach appears to hold some promise of success. Participants' self-report of improved knowledge, confidence and attitudes with educational interventions is encouraging. Moreover, this review highlights the need for more robust studies in this area. Targeted dementia training for physiotherapists may ultimately enhance patient care and lead to improved patient outcomes.

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