



# The Effect of Training on Dementia Care among Nurses: A Systematic Review

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## Abstract

**BACKGROUND:** Dementia is currently a global concern in aging societies. Nurses have major roles in caring for patients with dementia in various settings. Many trainings on dementia have been conducted for nurses and other health staffs. However, reviews of the effect of the trainings on nurses are still scarce.

**AIM:** This paper aimed to review the impact of training on dementia care among nurses in different settings.

**METHODS:** Systematic database search of PubMed, Medline, EBSCO, and ProQuest was conducted from 1990 until February 2019. Keywords used were dementia, training, education, and nurses. Additional references were collected using Google Scholar. Inclusion criteria were primary papers, written in English, involved nurses, related to dementia, and measured the effect of training. Review followed the Cochrane guidebook and Preferred Reporting Items for Systematic Reviews and Meta-Analysis.

**RESULTS:** From 2039 papers, this review included 20 articles. For methodology, most studies employed quantitative methods (90%). Only one article used qualitative methods (5%) and another used mixed methods (5%). Pre-test and post-test were the most common study design used and four articles used randomized control trials. The settings of the studies were nursing homes or long-term care facilities (45%), hospitals (35%), and other settings (20%). Length of the training varied from 2 h to 18 h within a maximum period of 8 months. The various outcome measures were categorized into four domains: Cognitive, physical, psychological, and working performance. The results of the review indicated that training and education for nurses can improve their knowledge, attitude, confidence, and self-efficacy toward better dementia care. However, the results regarding staff burnout, stress, and physical health complaints are still unclear.

**CONCLUSION:** Training and education in dementia care were varied and generally improved nurses' capacities mainly in cognitive domain. However, the beneficial psychological effect and improvement in nurses' working performance were questionable.

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## Introduction

Dementia has become a global concern in the aging population. The need for quality care for dementia has been increasing as the number of patients with dementia is snowballing. The World Alzheimer Report in 2016 stated the number of people with dementia in the world has reached 47 million and it is predicted to be more than 131 million in 2050 [1]. There is no exact number of dementia cases in Indonesia but it is estimated that the number will reach more than 2 million in 2030 [2]. Eminence services in dementia care are essential to increase the quality of life of people with dementia and their caregivers. Nurses as the first line in formal caregivers for dementia patients play a key role in this service. However, nurses' knowledge and skills toward persons with dementia are considered lacking [3]. Thus, dementia training for nurses has emerged as a new trend, especially in developed countries [4], but not in developing countries. Different models and strategies have been used to train nurses and allied health staff to provide better services for patients with dementia. Accordingly, the effect of dementia training

on nurses needs to be explored before it can be adapted for nurses in Indonesia. A systematic review by Surr and Gates in 2017 [5] evaluated the training in dementia care using the Kirkpatrick model and the results showed that educational programs in dementia should be relevant to the background of the trainee, support the application in the field, and consider the availability of tools and guidelines to guide practice. However, no specific review on the effect of training for nurses was found. Thus, a specific review on the effect of dementia training on nurses is essential to guide practice toward future training in dementia care.

## Methods

### Study design

This review is guided by Cochrane systematic review book [6] to produce an analysis for the effect of nursing education or training on nurses in dementia care. The writers also used the Preferred

Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) [7] to guide the literature search in this review.

### Literature search strategy

Four databases were searched, namely, PubMed, Medline, EBSCO, and ProQuest with the following keywords: Dementia, training, education, and nurses. Google Scholar was also explored to identify papers or reports about the topic in the Indonesian Language since training on dementia in Indonesia was the first aim of this review. However, no paper was found from Indonesia, so the search strategy was changed to English. Medical Subject Heading (MeSH) terms were firstly searched in PubMed before the probing was managed. The keywords being used were dementia (((("Alzheimer Disease" [MeSH]) OR "Dementia" [MeSH]) OR "Frontotemporal Dementia" [MeSH]) OR "AIDS Dementia Complex" [MeSH]) AND training (("Education" [MeSH] OR "education" [Subheading] OR "Schools, Nursing" [MeSH] OR "Staff Development" [MeSH]) OR ("Vocational Education" [MeSH] OR "Learning" [MeSH])) AND "Nurses" [MeSH] OR "Nursing" [MeSH] OR "nursing" [Subheading] OR "Schools, Nursing" [MeSH] OR "Nursing, Team" [MeSH] OR "Students, Nursing" [MeSH] OR "School Nursing" [MeSH] OR "Geriatric Nursing" [MeSH] OR "Nurse Clinicians" [MeSH] OR "Education, Nursing, Diploma Programs" [MeSH]). Boolean operators and truncation were also utilized. Searching was conducted from February 18 to 20, 2019. Hand searching was also conducted in Google Scholar to find relevant articles. Pointers for searching were generated from the list of references of the selected papers. No limitation on the year of publication was applied, but only peer-reviewed studies published after 1990 were included. However, no risk of bias assessment was applied for the random controlled trials (RCTs). Furthermore, CINAHL as the main source of papers for nurses was not searched due to limitations in access.

### Inclusion/exclusion criteria

PICO format was adapted in this review with the following guide: Population (nurse); Intervention (education or training); Comparison (usual care or other intervention if control group was available); and Outcome (changes on participants).

Inclusion criteria for studies included in this review were the following articles: (1) Experimental study or primary study, (2) the topic was about dementia, (3) written in English or Indonesian language, (4) the participants were nurses or at least some nurses involved, and (5) the outcome measured was on the nurses or allied health providers and not the training. The exclusion criteria were as follows:

The article does not discuss about training or program or education, does not include nurses, and does not relate to dementia.

### Search outcome

The search processes in the four databases resulted in 1277 papers from PubMed, 69 from Medline, 151 papers from EBSCO, and 1226 from ProQuest. The process of the paper selection is presented in Figure 1. The figure was guided by PRISMA flowchart. A total of 2723 papers were identified from this process. There were 19 papers selected from additional resources, namely, Google Scholar. All of these studies were then screened for duplicates which generated in 2039 papers. Title and abstract were next screened from this number and that step generated 155 papers. From 155 abstracts reviewed, 78 were excluded due to unmet inclusion criteria, which resulted 77 papers. Full papers from 77 records were downloaded and assessed based on the eligibility criteria. Finally, 20 articles met the inclusion criteria and were included in the study (Figure 1).

### Quality appraisal

Quality appraisal was managed before the paper was analyzed. Appraisal was based on the study by Surr *et al.* [4] to evaluate the selected papers. This appraisal was generated from Caldwell *et al.* [8] and the Critical Appraisal Skills Program checklist. Using the answers: Yes (scored 2), partially (scored 1), or no (scored 0), the papers were weighted and categorized as high quality if the total score was 11–14; medium if the total score was 6–10; and low if the total score was 5 or less. The process of quality judgment was managed by the first author and discussed with the other members of the research team.

### Data abstraction, analysis, and synthesis

Data were selected through this paper quality process by the first and second authors. Meanwhile, the development of the review progress and methods was conducted by all of the authors. Routine meetings were conducted to discuss the studies included in the review. Since the data varied in terms of methodology as well as the instruments employed to measure outcomes, we could not conduct a meta-analysis. There was no paper in Indonesian language. Hence, no translations were needed. Papers that only measured the feedback of the participants in the training process were also excluded. The selected papers were then analyzed based on the characteristics of the studies, training conducted (the topic and the length), the outcome

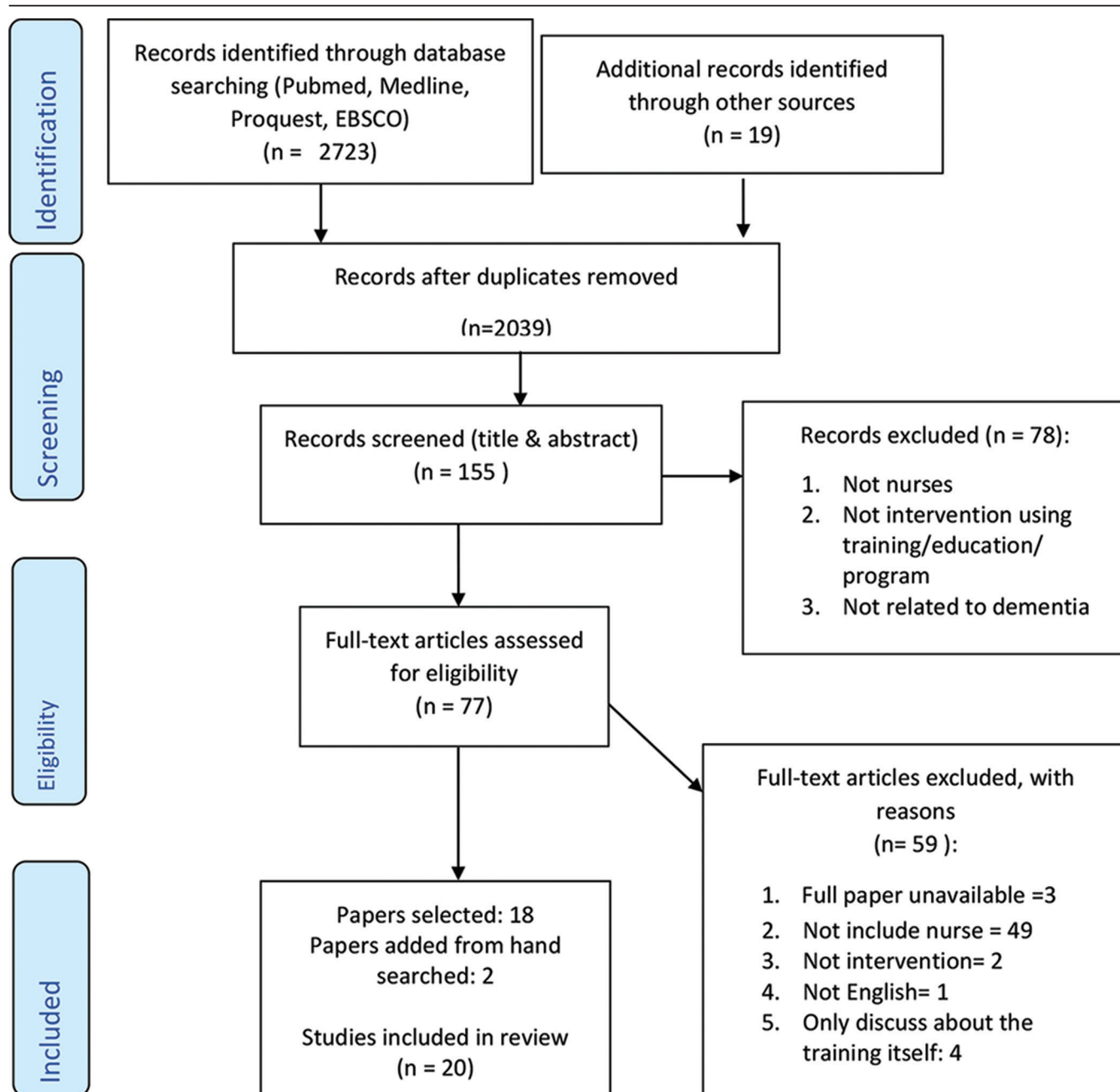


Figure 1: Flow Diagram Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Guidelines [7]

measured, and the instrument as well as the time of the measurement.

## Results

There were 20 studies included in this review. They were published between 1996 and 2018. The studies were mostly from the USA and UK while the others were from Australia, China, Scotland, German, Japan, Canada, and Sweden. The interventions were conducted for nurses and staff in the hospital, long-term care, nursing home, residential home, public

health centers, and even a training center and a supporter caravan (Table 1). They were da Silva da Silva Serelli *et al.* [9], Davison *et al.* [10], Elvish *et al.* [11], Guzmán *et al.* [12], Jack-Waugh *et al.* [13], Kemeny *et al.* [14], Kuske *et al.* [15], Matsuda *et al.* [16], Moyle *et al.* [17], Palmer and Withee [18], Palmer *et al.* [19], Peterson *et al.* [20], Pleasant *et al.* [21], Schindel Martin *et al.* [22], Shanley *et al.* [23], Soderlund *et al.* [24], Surr *et al.* [25], Teodorczuk *et al.* [26], Wang *et al.* [27], and Wang *et al.* [28]. All papers were in English. The summary of the quality of the papers is presented in Table 2.

The quality of the papers was mostly high quality (75% or 15 papers), medium quality (20% or 4 papers), and only 5% were low quality. There

**Table 1: Summary of included study**

Author(year)	Country	Setting	Methods	Length of training	Outcome measure	Instrument	Time space of measurement
da Silva Serelli et al.(2017)	Brazil	LTC	QN	2days at 2 h, 6 individual session	Burden, depression, anxiety, quality of life	Zarit burden scale, Beck Depression inventory, Beck anxiety inventory, SF 36	Before training, 12weeks after
Davison et al.(2007)	Australia	NH	RCT	8 session, 60–90min each	Burnout, self-efficacy, nursing performance	MBI: Maslach Burnout inventory, self-efficacy of Dementia care, The scale of nursing performance	Before training, post training, 6 months after training
Elvish et al.(2018)	UK	Hospital	QN	1day, 6 h	Confidence, knowledge, belief	CODE: Confidence in dementia, KIDE: Knowledge in dementia, Controllability belief scale	Before, after training
Guzman et al.(2017)	UK	NH and RH	QN	3days	Quality of interaction, care environment assessment, competence, attitudes, job satisfaction	QUIS: Quality of interaction schedule, SCEAM: Sheffield care environment assessment matrix; SCIDS sense of competence in dementia care staff, ADQ: Approaches to dementia questionnaire, job satisfaction index	Baseline, before training, after training, follow-up
Jack-Waugh et al.(2018)	Scotland	Hospital	QN	8 months blended learning	Attitude, knowledge, efficacy	ADQ, KIDE, self-efficacy	Before training, after 8 months
Kemeny et al.(2006)	USA	LTC	QN	Not clear, formal and informal within 5weeks	Knowledge, reaction	Knowledge scales of PCC; training reactions questions	Before, not clear
Kuske et al.(2009)	Germany	NH	RCT	13 session at 1 h, within 13weeks	Knowledge, competencies, caregiving, burnout, health complaints	GEROLF staff questionnaire, Penn State Health Caregiving Questionnaire Maslach Burnout Inventory, Level of health complaints about dementia care	Baseline, after training, after 6 months
Matsuda et al. 2018	Japan	Supporter caravan	QN	2 sessions, at 90min	Knowledge, awareness	DKT-SC, awareness questionnaire	Before, after training
Moyle et al. 2016	Australia	LTC	QN	12 h	Experience, satisfaction	SEWDR: Staff experience of working with demented residents	Before, after training
Palmer and Withee(1996)	USA	NH	QN	Not clear	Perception of work and problem behavior	Ryden's perception scale	Before, after training
Palmer et al.(2014)	USA	Hospital	QN	1day, 5 modules	Work difficulty, confidence, knowledge, care issue	Explained in other paper	Before training, after 3 months
Peterson et al.(2002)	USA	LTC	QN	6 h training	Knowledge, stress, self esteem	Dementia quiz, FCSI: Formal caregivers stress index, Reciprocal Empowerment Scale	Before, after training, after 2weeks, after 6–8weeks
Pleasant et al.(2017)	USA	Training center	QN	4×at 40min	Knowledge, competence	DKQ: Dementia knowledge questionnaire, SCIDS: Scale of competence in dementia care staff scale	Before, after training, after 30days
Schindel Martin et al.(2016)	Canada	Hospital	QN and QL	1day, 7.5 h	Efficacy, experience	SBMSEP: Self-perceived behavioral management self-efficacy profile, focus group discussion	Before, after training, after 8weeks
Shanley et al.(1998)	Scotland	Hospital	QL	4days	Experience	4 research questions	Before, after training, after 6 months
Soderlund et al.(2014)	Sweden	NH	MM	10days, followed every month, 1year	Working environment	Creative climate questionnaire	Before, after training
Surr et al.(2016)	UK	Hospital	QN	3.5days, within 3–4 months	Attitudes, experience, efficacy	ADQ: Approaches to dementia questionnaire, SEWDR: Staff experiences of working with demented residents questionnaire, Caring efficacy scale(CES)	Before, after training, after 4–6weeks, after 3–4 months
Teodorczuk et al.(2014)	UK	Hospital	QN, QL	2days	Confidence, attitude	Comments from participants	Before, after training
Wang et al. (2017a)	China	PHC	RCT	3days	Knowledge, attitudes, satisfaction	ADKS: Alzheimer's disease knowledge scale, DCAS: Dementia care attitude scale, ADCQ: Advanced dementia care questionnaire	Before training, after 3 months
Wang et al. (2017b)	China	PHC	RCT	2x at 3 h, applet based	Knowledge, attitudes	CADKS: Chinese Alzheimer's disease knowledge scale, CDAS: Chinese dementia attitudes scale	Before training, after 3 months

QN: Quantitative study, QL: Qualitative study, MM: Mixed method study, RCT: Randomized controlled trial, LTC: Long-term care, NH: Nursing home, RH: Residential home, PHC: Public health center.

were more quantitative than qualitative studies in the review (90% vs. 5%). Only one employed mixed methods (5%). Pre-test and post-test were the most commonly used method in the studies and four employed RCT. The setting of the papers was nursing homes or long-term care facilities (45%), hospitals (35%), and only two studies were conducted in public health centers in China (10%). The other two studies were conducted in other settings (Table 1).

There are distinctions of training toward dementia in terms of length and content. The length of training varied from 1 full day session up to 4-day trainings which were separated within several weeks or months. The delivery of the training was mostly divided into different modules from one module up to 10 modules which consisted of different topics

such as dementia, delirium, confusion, and person-centered care.

There were many aspects measured in the data abstraction. Hence, the outcomes for the nurses and others were then categorized into four domains, namely, cognitive, physical, psychological, and the working performance domains. The cognitive domain consists of knowledge about dementia. The physical category was based on the health complaints from the caregivers and the nurses. The following were the psychological components, including attitude, stress index, self-esteem, control belief, and perception of problems. The last category used in this review was working performance. Working performance was not only related to performance, competency, and efficacy but also job satisfaction, burnout, and working environment after the training (Table 3).



**Table 2: Quality of selected studies**

Author(year)	High quality	Medium quality	Low quality
da Silva Serelli et al. (2017)	✓		
Davison et al. (2007)	✓		
Elvish et al. (2018)	✓		
Guzman et al. (2017)	✓		
Jack-Waugh et al. 2018	✓		
Kemeny et al. (2006)	✓		
Kuske et al. (2009)	✓		
Matsuda et al. 2018	✓		
Moyle et al. 2016	✓		
Palmer and Withee(1996)		✓	
Palmer et al. (2014)		✓	
Peterson et al. (2002)	✓		
Pleasant et al. (2017)	✓		
Schindel Martin et al. (2016)	✓		
Shanley et al. (1998)		✓	
Soderlund et al. (2014)	✓		
Surr et al. (2016)		✓	
Teodorczuk et al. (2014)			✓
Wang et al. (2017a)	✓		
Wang et al. (2017b)	✓		

Cognitive domain or knowledge was the most measured outcome in the papers; more than half (60%) of the papers reviewed measures of the nurses' knowledge after the training program. Some instruments were used to evaluate the outcome on knowledge before and after the training, namely, ADKS or Alzheimer's Disease Knowledge Scale [27], KIDE or Knowledge in Dementia [11], [13], DKT-SC or Dementia Knowledge Test-Supporter Caravan [16], knowledge scales of PCC or Person-Centered Care [14], and Gerolf staff questionnaire which measure knowledge and competencies related to dementia [15], dementia quiz [20], Dementia Knowledge Questionnaire or DKQ [21], and CADKS or Chinese Alzheimer's Disease Knowledge Scale [28]. The interludes between the pre-test and post-test measurements in the knowledge domain varied from directly after the course, to 2 weeks following the training and up to several months after the course ended. Thus, the results also varied but they were generally positive (Table 3).

**Table 3: Outcome for nurses training**

Effect of training	Results improved	No significant change
Cognitive	Elvish et al.(2018), Jack-Waugh et al.(2018), Kemeny et al.(2006), Kuske et al.(2009), Matsuda et al.(2018), Palmer et al.(2014), Peterson et al.(2002), Pleasant et al.(2017), Shanley et al.(1998), Teodorczuk et al.(2014), Wang et al.(2017a), Wang et al.(2017b).	-
Physical	-	Kuske et al.(2009).
Psychological	Davison et al.(2007), Jack-Waugh et al.(2018), Palmer et al.(2014), Surr et al.(2016), Wang et al.(2017a), Wang et al.(2017b), Elvish et al.(2018), Palmer and Withee(1996).	da Silva Serelli et al.(2017), Peterson et al.(2002), Guzman et al.(2017).
Working performance	Moyle et al.(2016), Surr et al.(2016), Jack-Waugh et al.(2018), Davison et al.(2007), Schindel Martin et al.(2016), Elvish et al.(2018), Matsuda et al.(2018), Palmer et al.(2014), Guzman et al.(2017), Kuske et al.(2009), Pleasant et al.(2017), Teodorczuk et al.(2014), Wang et al.(2017a), Soderlund et al.(2014).	Guzman et al.(2017), da Silva Serelli et al.(2017), Davison et al.(2007), Kuske et al.(2009).

Following nurses' knowledge was the attitude toward persons with dementia. Attitude was included in the psychological domain in this context. Some measurements were used to evaluate nurses' attitude

to persons with dementia, namely, ADQ or Approaches to Dementia Questionnaire [12], [13], [25], DCAS or Dementia Care Attitude Scale [27], and Chinese Dementia Attitudes Scale or CDAS [28]. Nurses' attitude toward persons with dementia generally improved after receiving training in dementia care.

Besides their attitude, the review results reveal that the psychological domain was affected by training or education. Other psychological domains consisted of nurses' stress index, self-esteem, control belief, and perceptions of problems. In this domain, stress index and self-esteem of the respondent do not show a significant difference after training/education was conducted [9], [20]. Nevertheless, the consideration toward behavior that can be constrained was improved after training [11].

Besides nursing attitudes, the next aspect was working performance, which includes nursing confidence, efficacy, and competency. Different measurements were also used, namely, self-efficacy of dementia care, the scale of nursing performance [10], confidence in caring for dementia patient or CODE [11], [19], [26], sense of competence in dementia care staff [29], and self-efficacy [13]. The results mainly show improved nurses' confidence, competency, and efficacy in caring for dementia patients. The improvement was also found in the working environment [24], [29]. However, training did not reduce the workload and caregivers' stress [9], health problems [15], nor staff burnout [10], [15].

## Discussion

This paper aimed to review the effect of training on dementia for nurses in different settings. There are some important results regarding the effect of training for nurses in this area. The results mostly show increases in the knowledge toward dementia care. The results of pre-test and post-test showed that education about dementia can improve nurses' knowledge regarding persons with dementia and related factors in caring for dementia patients such as person-centered care. Even though the length of training was varied, the results were generally positive in increasing the cognitive domain. These results were similar among hospital staff as well as social and allied health professionals [4], [5] that indicated that the cognitive domain was the main outcome measured that generally improved after training. Therefore, training is not the only main source of knowledge, experience in caring for people with dementia [29], [30] and other contact with educational resources as well as joining a support group have also been related to knowledge about dementia [29], [31].

Regarding the results in the physical domain, there was no significant effect of training toward health complaints among nurses. This is because many factors affect health complaints, not just training and education in dementia care, such as burden in caregiving [32], [33] as well as their habit and environment [34]. Results regarding how education can increase the health condition were also scarce. Education is usually associated with social factors of health in general [35] rather than specific for nurses. Accordingly, no comparison could be made in this review. However, it has been argued that education can improve caregivers' skills in managing patients with dementia so that it can reduce their burden and at the end increase their psychological health [36].

In the psychological domain, the improvement of the attitude emerged in most papers but still the results were arguable for the stress level, self-esteem, and discernment about problems. It has been argued that the attitude of people is correlated with knowledge; thus, improvement of knowledge is mostly followed by better attitude [4], [37], [38]. In terms of stress level, the content of the training itself did not explicitly state about how to reduce the stress level in caring for persons with dementia [20]. Stress at the working place is defined as a feeling of under pressure when doing a job that can reduce work productivity and health [39]. Nevertheless, stress level is affected by many factors, such as gender, workload, and conflicts with colleagues [40] which were not measured in the studies. This condition is also applicable in terms of self-esteem, suggesting the need for more future research in this area.

Working environment also has unstable results, creating a gap for future study regarding the effect of training and education toward the situation at work. Robust research that includes nurses followed for various lengths of time will be suitable to answer the gap in the studies. Further review should work on this area of follow-up after training to identify the retention of training for nurses.

### **Review limitation**

The studies included in this review were intended for nurses only. However, not all papers included only nurses as subjects. Furthermore, bias assessment was not made for the RCT articles.

### **Implication for nursing practice**

Dementia education and training in dementia care are effective in increasing the capability of nurses and staff to improve their quality in caring for people with dementia.

### **Implication for nursing and health policy**

Training and education in dementia care have been demonstrated to have a positive effect on

nurses' competencies. Thus, training can be applied as a method for improving nurses' competency in caring for elderly people, especially those with dementia.

## **Conclusion**

The effects of dementia training for nurses were varied across settings. Training generally improved the cognitive domain, namely, knowledge regardless of the settings. In addition, various effects on the psychological domain were found. Attitude and problem perceptions were improved while self-esteem and level of stress were not in the long-term care settings. Working performance was also developed as training increased confidence, efficacy, and competencies of nurses unrelated to the location of the training. Training and education in dementia care have been demonstrated to develop nurses' competencies in caring for dementia patients. Hence, specific training in caring for dementia patients can be one of the standards in nursing competencies.

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