

The effectiveness of core competencies on nursing training and practice outcomes: a rapid literature review

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Abstract:

Background: Core competencies form an integral part of nursing practice. However, little is known about how core competencies impact nurse training, clinical outcomes, and quality of care. This rapid literature review examines what is currently known about the effectiveness of introducing core competencies in nurse training and practice outcomes and explores whether utilising core competencies has a direct or indirect impact on the quality of care for service users.

Method: A Systematic search of three databases (Medline, CINAHL and HIMIC) was undertaken. Additionally, the Royal College of Nursing (RCN) website was searched for grey literature. A thematic analysis was undertaken to synthesise the findings.

Results: In total, 2,004 articles were found through the databases and grey literature search; 1,300 papers were screened for titles and abstracts and 73 studies were eligible for full review, of which 29 papers were included for analysis. Core competencies were found to develop and improve nurse training leading to improvements in practice and clinical outcomes, including having a positive impact on the quality of care.

Conclusion: The findings from this rapid literature review suggest that implementing core competencies leads to effective nurse training to enhance nursing care, and patient and practice outcomes, including the quality of health services.

Background

Competency can be defined as “the capability that is developed by experience and learning” (Fukada, 2018, p.1). Three theories underpin nursing competencies: 1) Behaviourism — an ability to carry out individual core skills; 2) Trait theory — the necessity of individual traits to effectively perform tasks, such as critical thinking skills; and 3) Holism — understanding competency as a group of components, including skills, knowledge, attitudes, thinking capability and values that are needed in the certain circumstances (Takase et al., 2011). Of these theories, the theory of holism is widely accepted. Taking the theory and the definition of competency together, nursing competencies can be considered a complex combination of acquired knowledge, judgement, skills, values and attitudes to perform tasks in a certain context. Nursing competencies can have a significant impact on patient care and outcomes (Coster et al., 2018), highlighting its importance to be maintained and improved.

A competency framework can be used as a formal guidance to nursing competence throughout professional development and, nursing competency frameworks have been developed across the globe (Nursing Council of New Zealand, 2022; Singapore Nursing Board, 2018). In the United Kingdom, the standard competency used by the Nursing and Midwifery Council that sets out the expectation of nurse competence contains four domains: 1) professional values; 2) communication and interpersonal skills; 3) nursing practice and decision making; and 4) leadership, management and team working (Nursing and Midwifery Council, 2018). This standard competency has been used to underpin the development of nurse training to improve nursing knowledge, skills and attitudes so that nurses provide care that meets professional standards, and in turn improved quality of care, clinical outcomes, and reduced cost in healthcare (Ortega-Lapiedra et al., 2023). However, there is insufficient summarising evidence about how the core competencies impact nurse training, clinical outcomes, and quality of care.

In the United Kingdom, Health Education England (HEE) has developed the Primary Care and General Practice Nursing Career and Core Capabilities Framework (PCGN CCF) which is currently being used by organisations (Health Education England, 2021). The PCGN CCF is made up of two parts. The first is a career framework that sets out the six different career levels in the field. The second part delineates the skills, knowledge and behaviours expected at each level (i.e., core capabilities) which are broken down into four domains:

- Domain A. Personalised collaborative working and health promotion.
- Domain B. Assessment, investigations, and diagnosis.
- Domain C. Condition management and treatment.
- Domain D. Leadership and management, education, and research.

Within these domains there are a total of 14 capabilities across three tiers, with each tier representing a level of practice.

North East London Training Hub (NEL TH) have received funding from HEE to develop a pan-London General Practice Nursing (GPN) and Nursing Associate Competency Framework for Academic and Foundation Programmes. The framework will be developed based on the HEE PCGN CCF. Following the publication of the PCGN CCF, there is a need to clarify the evidence base underpinning the capabilities development. Given the importance of competency standards, the pan-London framework should be drawn from a robust and contemporary evidence base.

Aim: This rapid literature review aimed to explore two aspects of nursing competencies:

1. The effectiveness of introducing core competencies into nursing on nurse training and practice outcomes.

2. Understand if the implementation, and use of core competencies has a direct or indirect impact on the quality of care for service users.

Research question

This rapid literature review was designed to answer one research question:

What evidence is there to suggest that implementing core competencies for registered nurses in the United Kingdom will impact nursing training and practice outcomes or the quality of care for service users?

Methods

Data sources

Three databases (Medline, CINAHL and HMIC) were searched for English language only, peer reviewed literature published in the last 10 years from high income countries, except the United States and Canada, with a focus on studies providing high quality evidence. After the initial search, the Royal College of Nursing (RCN) website was searched for additional grey literature.

Search strategy

A systematic search was conducted using a detailed search strategy for each area of interest i.e., (nursing training, clinical outcomes, and quality care for service users). The search terms used were 'Nursing, General practitioner nurse*, Competency framework, Core competen*, Nursing training*, Effect*, Clinical outcome*, User*, Quality of healthcare'. See Appendix A for the detailed search strategy. The results were downloaded into an Endnote 20 database and de-duplicated.

PICO

Population

This rapid literature review only considered studies focusing on qualified nurses who worked in hospitals and general practices, community nursing services, including service users who received care.

Intervention

This rapid literature review included studies applying core competencies according to the Nursing and Midwifery Council (United Kingdom).

Comparison or control groups

Not applicable

Outcomes

Studies that report the impact of implementation of core competencies on nursing training and/or practice outcomes and/or quality of care were included.

Inclusion and exclusion criteria

Inclusion criteria:

- Qualified nurses and service users receiving care from qualified nurses.
- Studies conducted in hospital, general practices or community health services.
- The main aim of the study was to examine the impact of implementing core competencies on nursing training or clinical outcomes or quality of care.
- Articles written in English.
- Studies published between 2013-2023.

- Studies conducted in high-income countries (except North America).¹

Exclusion criteria:

- Studies that did not report on the impact of implementing core competencies on nursing training or clinical outcomes or quality of care.
- The aim of the study was to assess the reliability of specific instrument to measure a core competency.
- Studies published before 2013.
- Studies were not conducted in high-income countries.
- Conference abstracts, dissertations and theses, unreviewed grey literature, Delphi study, news, and review papers.
- Articles not published in English.

Screening and data extraction process

Articles were screened by one researcher (JT) using predetermined screening criteria (see Appendix B). Any concerns regarding the selection of studies were discussed with the project lead (IF). The data extraction was conducted by one researcher (JT). The full screening process is illustrated in the PRISMA diagram below (Page et al., 2021). Data extracted from the included studies were country of study conduct, aim, study design, sample size and results (Tables 1 and 2).

Data analysis

The data were analysed using the six-phase framework to do thematic analysis by Braun & Clarke (2006) (Maguire & Delahunt, 2017). The six phases are 1) familiarising with the data, 2) coding, 3) searching themes, 4) analysing themes, 5) defining themes, and 6) writing up themes (Braun & Clark, 2006).

Results

In total, 1,884 articles were retrieved through the systematic search (1,320 under nursing training, 548 under clinical outcomes and 16 were related to quality for service users). An additional 120 studies were found after searching the grey literature. In total, 2,004 articles were retrieved and after deduplication, 1,300 titles and abstracts were screened. At this stage, 1226 studies were excluded, and 73 studies (37 for nursing training, 35 for clinical outcomes, one study for quality of care for service users and two grey literature reviews) were included for full paper review (See Figure 1).

After a full review 29 studies reported the implementation of core competencies on nurse training (17) and clinical outcomes (12). There were no studies included regarding the quality of care for service users. One study was included from the grey literature review. Therefore, there were 29 papers included for the final analysis.

¹ As defined by the Organisation for Economic Co-operation and Development. Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus¹², Czech Republic, Denmark, Estonia, European Union, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States. <https://www.oecd-ilibrary.org/sites/f0773d55-en/1/4/3/index.html?itemId=/content/publication/f0773d55-en&csp=5026909c969925715cde6ea16f4854ee&itemI GO=oe cd&itemContentType=book#tablegrp-d1e4673>

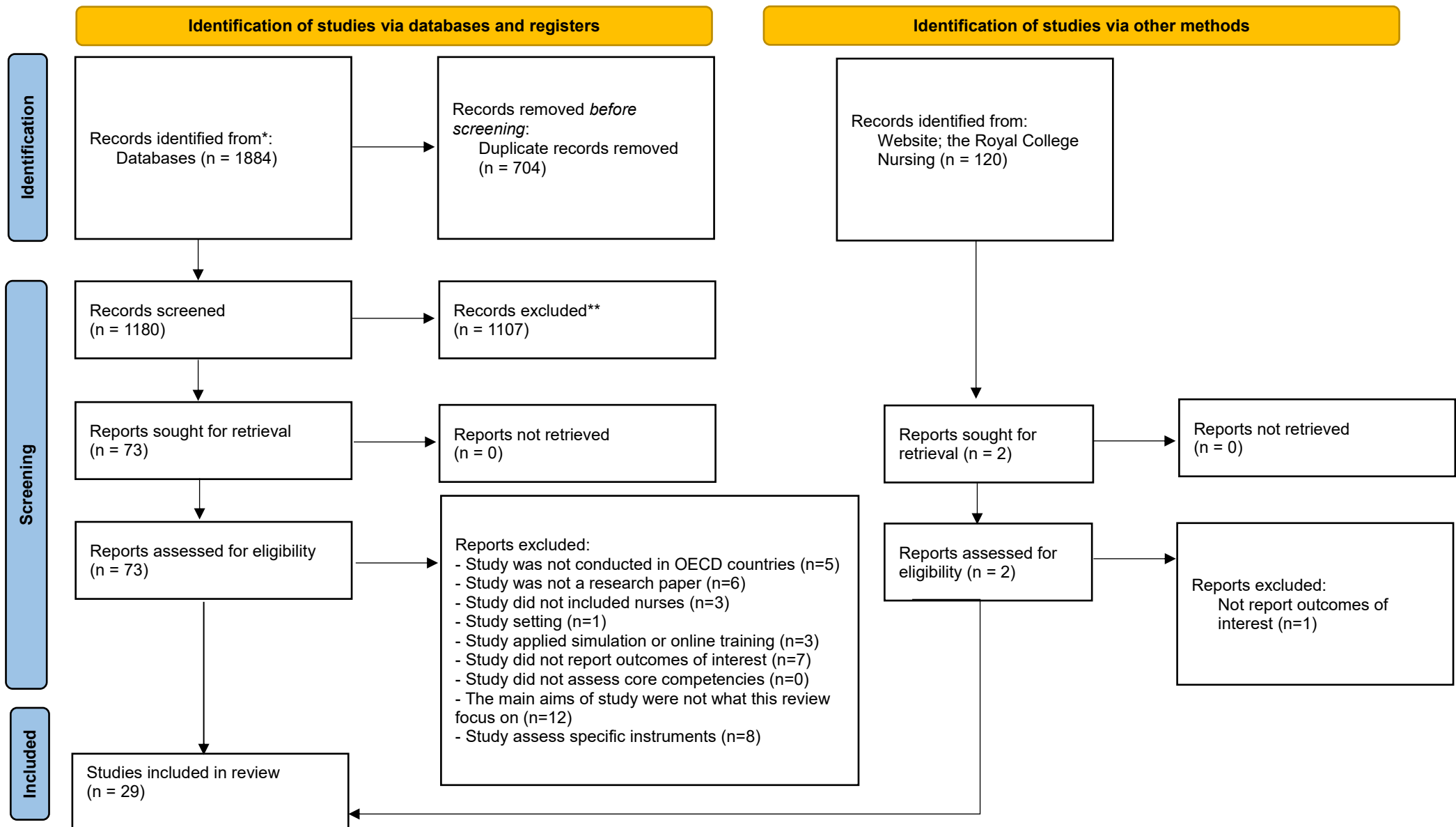


Figure 1: PRISMA 2020 flow diagram reports the screening process.

Findings

Five main themes were defined following the application of Braun & Clarke's (2006) thematic analysis namely: knowledge, communication, nursing practice skills, applying research in nursing care and additional findings (Refer to Table 1 and 2). These themes were core competencies that were developed and improved through nursing training. The next section will explain each of the five themes in detail.

Table 1: Studies reporting the impact of core competencies on nursing training and practice outcomes

Reference	Country	Study Aim	Designs	Sample size	Results
Hausken & Graue (2013)	Norway	1) to explain the development and utilisation of diabetic-care training for registered nurses (RNs) and nurse assistants (NAs) in a nursing home and community home-based services 2) to show the evaluation result of the programme and participants' experiences	Before-and-after (mixed method)	16 RNs 4 NAs	Qualitative aspects: nurses were required to update knowledge of diabetic care, exchanging caring experiences. The training programme was found to increase professional confidence and personal development, including sharing knowledge. Quantitative aspects: Lower scores in confidence of applying research and professional development were reported, but the scores increased after the training (5.5 vs 6.8). After training, competency in advocating for patients (7.6 vs 8.5), communicating between MDT team (7.2 vs 8.0) and communication with patients' kin increased (7.7 vs 8.7).
Castro & Collins (2014)	United Kingdom	To examine the impact of training on improving nurses' confidence	Before-and-after	N=17 (direct before and comparison: n=3)	The findings demonstrate a considerable overall gain in confidence, from an average starting confidence level of 51% to an average post training completion level of 78%.
Healey et al. (2016)	United Kingdom	To provide an overview of the nurse-led OA clinic, and to demonstrate the training development, crucial learning objectives, content and effect of the training to support delivery.	Before-and-after	N=9	8 out of 9 nurses reported that the training improved their confidence and knowledge of osteoarthritis .
Higson, Emery & Jenkin (2016)	United Kingdom	To provide training to mental health nurses who provide care to children and young and to assess the effectiveness of the training on increasing nurses' confidence and knowledge	Before-and-after	N=8	Three months after training self-report scores show improvement in knowledge of providing care for young adults with anxiety and depression (5.3 vs 7.3), self-harm and suicidal thoughts (5.3 vs 7.7) and eating disorders (4.9 vs 7.7) and confidence (4.7 vs 7.8), including skills, increased.

Reference	Country	Study Aim	Designs	Sample size	Results
Horton & Roser (2021)	Australia	To design, deliver and evaluate a nursing specific training program using spreadsheet software Excel to improve nurse competence and confidence in data navigation.	Cross-sectional survey	N=6	Nurses found the training improved their understanding of statistical data on spreadsheets to design nursing care plans.
Louis Hulse (2016)	United Kingdom	To critically evaluate the effectiveness of the implementation of a structured learning and assessment framework for paediatric vascular access and its impact on improving the learning experience, skill acquisition and retention of health professionals.	Experimental design	Group 1: taken programme in the past year (n=38) Group 2: sub group of participants from Group 1 given an additional structured learning and assessment framework (n=7)	The training improved patients' experience and care. Group 2 reported positive changes in clinical competence achievement after framework implementation.
Bogossian et al. (2017)	Australia	To evaluate the feasibility of a pilot educational intervention in improving nurses' competence and confidence to care for mothers and infants in the first postnatal year.	Before-and-after	N=19	Before the intervention, the scores in the domains of competence and confidence were very low, however, after the educational training provided, 88% and 77.7% of nurses reported that competence and confidence were enhanced. Knowledge, skills and confidence obtained from the program were reported.
La Sala et al. (2017)	Italy	To assess the effects in clinical practice of a training program for nurses in the management of patients with cardiovascular diseases, leaning towards a self-oriented patient management and therapeutic patient education.	Experimental design	N (experimental) = 53 N (control) = 101	When compared between trained nurses (experimental group) and untrained nurses (control group), nurses in the experimental group focused more on patients and secondary prevention, highlighting the importance of patients' centre of care.
Robinson et al. (2017)	United Kingdom	To 1) identify the relevant training experience of rheumatology nurses who provide methotrexate education and, 2) explore their confidence	Cross-sectional survey	N=104	A total of 104 nurses completed the survey; 70% received some training to administrate methotrexate and provide self-management education to patients. Of these, half found the training very helpful, 88% agreed that knowledge of methotrexate required a lot in practice, and 60% reported very confident in oncology nurse roles. They were also tested on their

Reference	Country	Study Aim	Designs	Sample size	Results
		and competence in undertaking this role.			knowledge about methotrexate and its side effects, 90-100% of them selected the correct answers regarding vaccinations, antibiotics and liver function.
Baird et al. (2018)	Australia	To evaluate the impact of training on knowledge and preparedness of midwives and nurses to conduct routine enquiry about domestic violence with women during the perinatal period.	Before-and-after	N=149	Participants were assessed on knowledge in domestic violence issues. Pre and post training scores were 21.5 vs 25.6 ($z=-9.56$, $p<0.001$). The quality and impact of training were rated, the mean impact score was 27.86 (SD = 2.59, range 12–30). 87.6% of participants found that awareness of domestic violence in the community was improved, and 60% reported great improvement of their knowledge.
Akpenyi et al. (2019)	United Kingdom	To assess the effectiveness of training, its objectives, and define areas required improvements	Cross-sectional survey	n(nurses)=6 n(patients)=16	The program developed nurses' confidence and improved their standard knowledge, and prepared them for clinical practice. It improved communication, empathy, including advanced communication, health promotion and respecting people. Mentors were essential for nurse training. Patients who received cared from trained nurse were satisfied with care provided.
Kaihlainen (2019)	Finland	To examine the perceptions of nurses about the content and utility of cultural competence training that focuses on increasing awareness of one's own cultural features.	Qualitative	N=10 (8 registered nurses and 2 practical nurses).	Perceptions about the training were divided into three main categories: general utility of the training, personal utility of the training, and utility of the training for patients. Participants perceived the training as useful and thought-provoking, and it helped participants understand cultural differences.
Steinwandel et al. (2018)	Australia	To assess the feasibility of an education programme to ensure renal nurses receive adequate ultrasound training to attain competence in inferior vena cava ultrasound (IVC-US).	Post-intervention assessment	N=1	At 60/100 scans, a trained nurse was able to do IVC-US at a reported "good" ability and accuracy compared to the expert. The 60 scans depicted the final milestone of the renal nurse achieving a good level of competency and accuracy in reviewing the scans and assessing intravascular volume status when compared to the expert.
Van Houveltington et al. (2020)	Netherlands	To evaluate the training to improve telehealth knowledge, self-efficacy and using telehealth in nursing practice.	Before-and-after	N=15 from Primary and hospital care; N=14 from homecare	Knowledge and self-efficacy were assessed before, immediately after and 6 weeks after training. The scores in all domains across primary care, home care and hospital were higher immediately after training ($p<0.05$) but not the scores of self-efficacy on using telehealth ($p>0.05$).
Urstud et al. (2018)	Norway	To assess nurses' satisfaction, competence, training and perceptions of quality of care on the use of patient education program for renal transplant recipients.	Cross-sectional survey	N=50	Nurses found the program useful and beneficial for providing tailored education for renal transplant recipients. The education training motivated junior nurses more than senior nurses ($p<0.05$).

Reference	Country	Study Aim	Designs	Sample size	Results
Lehmkuhl et al. (2020)	Denmark	To explore critical care nurses' experiences of research participation during a one-year recovery programme for intensive care survivors.	Qualitative study	n=27	Participating in the program improved nurses' knowledge and their understandings of patients. It also increased their ability to provide care to patients using communication skills and patients centred of care. The programme also enhanced their research skills and critical appraisal.
Leonardsen et al. (2021)	Norway	To compare nurses' self-assessed competence and perceived need for more training in intensive care units treating patients with respiratory insufficiency before and after completion of a seven-hour educational programme, and to assess whether factors such as age, educational level, years of experience and percentage of employment are associated with these outcomes.	Before-and-after	N(pre)=85 N(post)=52	<p>The pre- and post-education studies comprised responses from 85 (52%) and 52 (32%) nurses, respectively. The educational programme contributed to increased self-assessed competence in seven items. Self-assessed competence was significantly associated with nurses' educational level, and critical care nurses reported higher self-assessed competence than registered nurses on 50% of the items.</p> <p>There were only 8 of 50 items on self-competency assessments that scores were significantly different between pre and post-test. Among the 8 items, there were 4 items that related to providing care according to individual patients' needs.</p>

Table 2: Studies reporting the effectiveness of core competencies on clinical outcomes and quality of care

Reference	Country	Study Aim	Study Design	Sample size	Results
Fealy et al. (2013)	Ireland	To examine the leadership development program on service improvement	Before-and-after assessment (mixed method)	N=70	The programme had positive and direct on services and service users due to the improvement of quality of services.
Cole & Johnson (2013)	United Kingdom	To pilot a nurse-led arterial cannulation in adult patients in high dependency unit by one advanced critical care practitioner	Pre-, post- audit	N=1	The waiting time for arterial cannulation was reduced from the average 4.3 hours to 1.2 hours, and 73% of cannulation by ACCP achieved the target wait under 45 minutes. Also, there were fewer complications, such as infection and bleeding, during insertion. The attempts of insertions were lower when performed by ACCP than doctors.
Raleigh & Allan (2016)	United Kingdom	To explore multiple perspectives on the use of physical assessment skills by advanced nurse practitioners in the UK.	Qualitative study	N=22	The community team worked together and helped to improve patients' outcomes. Physical assessment skills can be used to provide long term care and person-centred care, prevent re-hospitalisation, maintain patients' safety, combine various nursing skills, and understand complexity of patient illness which increases nurses' understanding of patients' beliefs and values.
Dal Molin et al. (2017)	Italy	To explore the effect of "Primary Nursing" on nursing-sensitive patient outcomes, staff-related outcomes and organisation-related outcomes.	Before-and-after assessment *Nurses were trained to be primary nurse in hospital setting by using online course + 4 day workshop*	Patients; n-pre=2857, n-post=3169. Nurse n= 369	Nurses reported their competencies on diagnostic functions, situational management, ensuring quality of care and teaching had improved ($p<0.05$), including their perception on leadership skills albeit insignificant. Patients' satisfaction on PN implementation was also increased.
Nilsson et al. (2017)	United Kingdom	To gain a deeper understanding of value-based healthcare (VBHC) when used as a management strategy to improve patients' health outcomes	Qualitative study	N=20, n (nurse)=2	Participants reported that applying VBHC improved patient outcomes and care processes, including improvement of health-related outcome measurement.
Ersson et al. (2018)	Sweden	To enhance quality of care and clinical care by implementing evidence-based medicine and to improve patients' safety in the intensive care unit.	Retrospective study	N=199, n(nurse)=90	After the implementation of evidence-based medicine, length of stay, intubation period and mortality rates were significantly reduced, and life year gained, and quality-adjusted life years gain increased by 21% compared to 2008.
Valcarenghi et al. (2018)	Italy and Switzerland	To understand how nurses working in two different adult cancer centres make healthcare	Qualitative study	N=20	A good relationship with patients and understanding patients' thoughts were important in the cancer unit. Working as multidisciplinary team was also crucial and trust was essential as it

Reference	Country	Study Aim	Study Design	Sample size	Results
		decisions and assess the respective outcomes on their patients.			improved patients' clinical outcomes. Nurses acted as advocates in issues related to treatments that may have affected patients' quality of life. Experiences of nurses in the field and educational level affect clinical decision making. Communication was a paramount for care.
Červený et al. (2020)	Slovakia	The goals of this study were to determine and evaluate the perception of cultural competence of nurses in the Slovak healthcare system, identify factors that influence their perception, and ascertain opportunities to improve nurses' cultural competence.	Cross-sectional survey	N=267	34% of nurse reported their cultural competency. 32% of nurses who completed diversity training reported higher cultural competent behaviour scores than who did not complete the training (p<0.001).
Rheumatology Nurse Competency Framework Evaluation report (2021)	United Kingdom	To explore nurses' perspectives on the framework	Cross-sectional survey & interview (Mixed-method)	Quantitative: N=106, Qualitative: N=15	54% found the framework can be used for continuing professional development, provided standard of knowledge and skills, demonstrate skills and knowledge. They also reported that the framework was a reliable resource to enhance quality of care.
Kristoffersen et al. (2022)	Norway	To explore experiences of anaesthesiologists and nurse anaesthetists in the pre-assessment anaesthetic clinic	Qualitative study	N=13	Working in the pre-assessment anaesthetic clinic, both anaesthesiologists and nurse anaesthetists found that teamwork, communication, and shared decision making have positive impacts on patients' outcome and quality of care.
Østervang et al. (2022)	Denmark	To explore emergency department nurses' experiences of providing care to patients who self-harm.	Qualitative study	N=18	Nurses found that communication skills, knowledge and attitude, including creating peaceful and quiet atmosphere, were important for establishing relationships with patients and this in turn had a positive impact on patients who were admitted to emergency department after episode of self-harm.

Knowledge

Eleven out of the 29 articles reported that knowledge in nursing is crucial as defined in nursing core competencies (Akpenyi et al., 2019; Baird et al., 2018; Bogossian et al., 2017; Castro & Collins, 2014; Hausken & Graue, 2013; Healey et al., 2016; Higson et al., 2017; Lehmkuhl et al., 2020; Robinson et al., 2017; Urstad et al., 2018; van Houwelingen et al., 2021). It has been suggested that regular training should be provided to nurses so that their knowledge and skills are up to date. Two Before-and-After studies reported increased knowledge of how to provide care to patients, leading to better patient and practice outcomes (Hausken & Graue, 2013; Healey et al., 2016). Moreover, early career training was reported as necessary because although newly qualified nurses were less experienced, they were more motivated and had a greater appetite for knowledge than nurses who had been qualified for longer (Urstad et al., 2018). Hence, training to develop and improve nurses' knowledge should be provided throughout their careers, especially at the beginning. Nurse specialists require comprehensive training to develop their knowledge in focused areas so that they can provide nursing care and health education to patients with specific needs (Robinson et al., 2017; Urstad et al., 2018).

Many studies found a positive association between knowledge and confidence including self-efficacy (Bogossian et al., 2017; Castro & Collins, 2014; Hausken & Graue, 2013; Healey et al., 2016; van Houwelingen et al., 2021). Confidence is an important factor for nurses to provide nursing care, make clinical decisions, and educate their patients (Bogossian et al., 2017; Castro & Collins, 2014; Hausken & Graue, 2013; Healey et al., 2016; Higson et al., 2017). Nursing training can improve nurses' knowledge which in turn increases confidence and results in improved practice outcomes.

Communication

Eight out of the 29 studies reported the importance of communication in nursing (Baird et al., 2018; Hausken & Graue, 2013; Kristoffersen et al., 2022; La Sala et al., 2017; Leonardsen et al., 2021; Østervang et al., 2022; Raleigh & Allan, 2017; Valcarenghi et al., 2018). Communication is one of the standard competencies defined by the NMC. Communication between nurses and patients is of paramount importance when it comes to delivering safe and appropriate care (Valcarenghi et al., 2018). Training courses to improve communication were found to enhance communication skills among nurses, which study participants reported as crucial and beneficial (Hausken & Graue, 2013; Lehmkuhl et al., 2020). Improving communication skills enabled participants to build a relationship with patients which had a positive impact on treatment and care leading to the improvement of clinical outcomes (Kristoffersen et al., 2022; Østervang et al., 2022), particularly in nursing related to mental health (Baird et al., 2018; Østervang et al., 2022).

Communication is not only key between nurses and patients, but also important within multidisciplinary teams. Communication training was reported to improve team working (Hausken & Graue, 2013; Kristoffersen et al., 2022). Teamwork and communication also have positive impacts on patient outcomes and quality of care (Kristoffersen et al., 2022; Raleigh & Allan, 2017; Valcarenghi et al., 2018).

Three studies also reported on communication training to increase the awareness of patient-centred care and the need to consider individual patient needs and circumstances (La Sala et al., 2017; Leonardsen et al., 2021; Raleigh & Allan, 2017). Nurses who were trained to improve communication skills focused more on patients and emphasised person-centred care than nurses who were not trained (La Sala et al., 2017). The studies also showed that training nurses to consider the needs of patients from different sociodemographic backgrounds improved care planning (La Sala et al., 2017; Leonardsen et al., 2021; Raleigh & Allan, 2017). This is crucial because patients' backgrounds, beliefs and values can have an impact on a patient's self-management and how patients perceive the importance of their care and treatment (La Sala et al., 2017; Leonardsen et al., 2021; Raleigh & Allan,

2017). Nurses were also trained in cultural competency when providing care so that they understood patients' perspectives better (Červený et al., 2020; Kaihlanen et al., 2019). Thus, it can be concluded that training for improving communication skills is beneficial to nurses to further develop nursing intervention and care based on patient-centred care. Training for communication also enhances nurses' capabilities to work with multidisciplinary teams to achieve better patient outcomes.

Nursing practice skills

The skills identified as requisite for nursing practice consisted of core practice skills for nurses and additional skills.

1) Core practice skills for nurses

One study of the 29 studies reported the importance of nurses being able to do physical assessment skills. Physical assessment skills are part of the essential nursing skill set. This was found useful to provide care to patients with chronic illnesses (Raleigh & Allan, 2017). These skills also prevented rehospitalisation, maintained patient safety, and improved understanding of the complex components of patient illnesses (Raleigh & Allan, 2017).

2) Additional skills

Four studies of the 29 studies reported additional skills among nurses. Nurses were trained to develop multiple skills in addition to core capability skills, including interpreting and understanding statistical data from spreadsheets (Horton & Roser, 2021), using telehealth (van Houwelingen et al., 2021), performing ultrasound to assess patients' intravascular volume (Steinwandel et al., 2018) and practising arterial cannulation (Cole & Johnson, 2014). Additional training was provided so nurses could provide sufficient care, reduce patient waiting time, and avoid complications from delayed treatments.

Applying research in nursing care

Four studies of 29 studies suggest that evidence-based practice is helpful for improving nursing practices and clinical decision-making. Improving research skills among nurses led to improved patient outcomes. For example, reductions in length of stay or period of intubation and reduced mortality rates (Ersson et al., 2018; Lehmkuhl et al., 2020; Nilsson et al., 2017). One study, an intensivist training program aimed at improving intensive care unit performance by incorporating evidence-based medicine when providing critical care, found that life years gained, and quality-adjusted life years gained increased by 21% (Ersson et al., 2018).

Additional findings

It is worth noting that although improving core competencies using nurse training alone increased clinical competence (Louise Hulse, 2016), nurses found that undertaking their clinical placement in conjunction with a nursing training programme was helpful in preparing them for clinical practice. Nurses also learned nursing skills and clinical decision making by working alongside experienced nurses (Akpenyi et al., 2019). This highlights the importance of situating clinical placements within nursing training programmes to maintain and improve nursing competencies. In addition, the training programme also increased patients' satisfaction with services (Akpenyi et al., 2019).

One study which examined the usefulness of implementing a core competencies frameworks found that such frameworks enhance clinical competency (Louise Hulse, 2016). Similarly, a study of nurses in the UK found that the Rheumatology Nurses Competency framework was a reliable tool which enhanced quality of care (Royal College of Nursing., 2020). These results emphasise the necessity of the inclusion of competency frameworks for maintaining and augmenting professional standards in nursing programmes.

Only one study focused on leadership and management skills. The authors found that leadership and management skills were built and improved through the nurse trainings (Dal Molin et al., 2018).

Discussion

This rapid literature review demonstrates that implementing core competencies to design nursing training is effective. These core competencies can be developed through nursing training to improve knowledge, communication, practice skills and research skills, all of which can benefit patient outcomes and quality of care, including increasing patient satisfaction. There are additional findings from the literature that were also reported, including leadership and management skills- one of the core competencies.

It is worth noting that maintenance of nursing competencies is required throughout a nursing career to sustain professional standards (Rahmah et al., 2021). However, the results of this rapid literature review show that highly experienced nurses were less motivated to learn during training, which might be related to higher levels of confidence compared to newly qualified nurses.

Further research is needed to explore the perceptions of highly experienced nurses and to examine the causes that make them less motivated. In so doing, the findings will inform nurse managers and other key stakeholders in the nursing field and ensure that nurses are motivated to maintain standards of care throughout the entirety of their careers, regardless of experience.

Nurses are required to demonstrate a variety of skills which are important for patient care (this is also in line with the NMC standard competency that nurses' performance should be for the best patient outcomes) (Nursing and Midwifery Council, 2018). However, there should also be a limit on nurse workload; otherwise, although beneficial to patients, the time needed to for training to multiple skills may lead to an unnecessary burden on nurses (Ivziku et al., 2022).

This rapid literature review also found that patient-centred care was developed through nurse training to improve core competencies. This is in line with the Health Education England statement that patient-centred care is a core capability needed for understanding and providing care according to patient needs, and leads to better clinical outcomes and reduces the burden of healthcare costs (Health Education England, N/A). It should be noted that there is a lack of literature supporting the HEE Core Capabilities and Career framework; further research is perhaps needed to ensure that the framework is evidence-based, particularly with regard to leadership and management. Furthermore, plans for developing nursing competencies in the field of primary care nursing (e.g., evidence-based practice and advanced nursing skills) should be implemented to improve patient clinical outcomes.

This rapid literature review has several limitations. First, there were selective inclusion and exclusion criteria determined by time limits, and using the selective eligibilities criteria helped us to find the studies that were relevant to nursing practice in the UK. Second, the findings might not be generalisable due to the limit of the searches and only a thematic analysis from a combination of qualitative and quantitative studies was performed here. Third, the studies included reported different interventions and populations. However, as this rapid literature review aims to assess the uses of core competencies, these differences were not considered to be substantial. The quality assessment of evidence for all 29 articles was not performed due to time constraints.

Conclusion

Core competencies are needed for nursing training and are required to maintain standards within nursing. This rapid literature review highlights the usefulness of and the connection between developing core competencies, enhancing nurse training, improving practice and clinical outcomes. Further research that focuses on specific populations and interventions might provide further

understanding on the effectiveness of the implementation of core competencies in each nursing field.

Appendix A: Example Search Strategy / Key Terms

1. The effectiveness of introducing core competencies on nurse training and practice outcomes.

1.1 The effectiveness of introducing core competencies into nursing on nurse training.

Search Strategy for OVID and HMIC:

#	Searches	Results
1	exp Nursing/	278084
2	nurs*.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	850525
3	general practitioner nurse*.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	20
4	GPN*.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	1229
5	1 or 2 or 3 or 4	862877
6	Core Competency framework.mp.	25
7	Core Competency framework*.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	29
8	Competency framework.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	691
9	Competency framework*.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	872
10	Core capabilities framework.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	4
11	Core competency.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	854
12	Core competen*.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	3564
13	Nursing competen*.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	1035
14	Nurse competen*.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	317
15	Clinical competen*.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	106206
16	6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15	109715
17	nurse training.mp.	1549
18	nursing training*.mp. [mp=ti, bt, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, ux, mx]	737
19	17 or 18	2259
20	5 and 16 and 19	208

Search Strategy for CINAHL: (TX means all text and I assumed it is similar to multipurpose in OVID-)

#	Query	Limiters/Expanders	Last Run Via	Results
S16	S11 AND S12 AND S13	Limiters - Published Date: 20130101-20231231; English Language Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	1,113
S15	S11 AND S12 AND S13	Limiters - Published Date: 20130101-20231231 Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	1,271
S14	S11 AND S12 AND S13	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced	2,098

			Search Database - CINAHL	
S13	TX nurse training OR TX nursing training*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	19,435
S12	TX Core Competency framework OR TX Core Competency framework* OR TX Competency framework OR TX Competency framework* OR TX Core capabilities framework OR TX Core competency OR TX Core competen* OR TX Nursing competen* OR TX Nurse competen* OR TX Clinical competen*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	63,582
S11	S9 OR S10	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	798,270
S10	"general practitioner nurse* or GPN**"	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	Display
S9	MW nurse or nurses or nursing	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	Display
S8	S3 AND S4 AND S5	Limiters - Published Date: 20130101-20231231; English Language Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	1,113
S7	S3 AND S4 AND S5	Limiters - Published Date: 20130101-20231231 Expanders - Apply equivalent subjects	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	1,271

		Search modes - Boolean/Phrase		
S6	S3 AND S4 AND S5	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	2,098
S5	TX nurse training OR TX nursing training*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	19,435
S4	TX Core Competency framework OR TX Core Competency framework* OR TX Competency framework OR TX Competency framework* OR TX Core capabilities framework OR TX Core competency OR TX Core competen* OR TX Nursing competen* OR TX Nurse competen* OR TX Clinical competen*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	63,582
S3	S1 OR S2	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	798,270
S2	"general practitioner nurse* or GPN*"	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	0
S1	MW nurse or nurses or nursing	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	798,270

Search Strategy for CINAHL: (TI and AB means title and abstract, respectively.)

#	Query	Limiters/Expanders	Last Run Via	Results
S10	S3 AND S6 AND S9	Expanders - Apply equivalent subjects	Interface - EBSCOhost Research Databases Search Screen - Advanced	595

		Search modes - Boolean/Phrase	Search Database - CINAHL	
S9	S7 OR S8	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	14,802
S8	AB nurse training OR AB nursing training*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	12,211
S7	TI nurse training OR TI nursing training*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	3,914
S6	S4 OR S5	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	9,494
S5	AB Core Competency framework OR AB Core Competency framework* OR AB Competency framework OR AB Competency framework* OR AB Core capabilities framework OR AB Core competency OR AB Core competen* OR AB Nursing competen* OR AB Nurse competen* OR AB Clinical competen*	Limiters - Published Date: 20130101-20231231; English Language Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	8,394
S4	TI Core Competency framework OR TI Core Competency framework* OR TI Competency framework OR TI Competency framework* OR TI Core capabilities framework OR TI Core competency OR TI Core competen* OR TI Nursing competen* OR TI Nurse competen* OR TI Clinical competen*	Limiters - Published Date: 20130101-20231231; English Language Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	3,025

S3	S1 OR S2	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	798,270
S2	"general practitioner nurse* or GPN*"	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	0
S1	MW nurse or nurses or nursing	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	798,270

1.2 The effectiveness of introducing core competencies on *clinical outcomes*

Search Strategy for OVID and HMIC:

#	Searches	Results
1	exp Nursing/	278084
2	"nurs*".ab,ti.	554079
3	"general practitioner nurse*".ab,ti.	20
4	"GPN*".ab,ti.	1129
5	1 or 2 or 3 or 4	685201
6	core competency framework.ab,ti.	24
7	"core competency framework*".ab,ti.	28
8	competency framework.ab,ti.	667
9	"competency framework*".ab,ti.	848
10	core capabilities framework.ab,ti.	4
11	core competency.ab,ti.	822
12	"core competen*".ab,ti.	3480
13	"Nursing competen*".ab,ti.	971
14	"Nurse competen*".ab,ti.	298
15	"clinical competen*".ab,ti.	3675
16	6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15	8907
17	"practice outcome*".ab,ti.	507
18	"patient outcome*".ab,ti.	67530
19	"clinical outcome*".ab,ti.	227603
20	17 or 18 or 19	291299
21	5 and 16 and 20	82

Search Strategy for CINAHL:

#	Query	Limiters/Expanders	Last Run Via	Results
S12	S3 AND S6 AND S9	Limiters - Published Date: 20130101-20231231; English Language Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	466
S11	S3 AND S6 AND S9	Limiters - Published Date: 20130101-20231231 Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	475
S10	S3 AND S6 AND S9	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	709
S9	S7 OR S8	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	261,875
S8	AB practice outcome* OR AB patient outcome* OR AB clinical outcome*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	226,024
S7	TI practice outcome* OR TI patient outcome* OR TI clinical outcome*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	61,808
S6	S4 OR S5	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	17,727

S5	AB core competency framework OR AB core competency framework* OR AB competency framework OR AB competency framework* OR AB core capabilities framework OR AB core competency OR AB core competen* OR AB Nursing competen* OR AB Nurse competen* OR AB clinical competen*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	14,890
S4	TI core competency framework OR TI core competency framework* OR TI competency framework OR TI competency framework* OR TI core capabilities framework OR TI core competency OR TI core competen* OR TI Nursing competen* OR TI Nurse competen* OR TI clinical competen*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	6,089
S3	S1 OR S2	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	871,377
S2	MW nursing OR AB nurs* OR AB general practitioner nurse* OR AB GPN*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	803,741
S1	MW nursing OR TI nurs* OR TI general practitioner nurse* OR TI GPN*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	747,890

2. Understand if the implementation - and use of - competencies has a direct or indirect impact on quality of care for service users.

Search Strategy for OVID and HMIC:

#	Searches	Results
1	core competency framework.ab,ti.	22
2	"core competency framework*".ab,ti.	26
3	competency framework.ab,ti.	557
4	"competency framework*".ab,ti.	725
5	core capabilities framework.ab,ti.	3
6	core competency.ab,ti.	809
7	"core competen*".ab,ti.	3392
8	"Nursing competen*".ab,ti.	920
9	"Nurse competen*".ab,ti.	289
10	"clinical competen*".ab,ti.	3544
11	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10	8516
12	service user.ab,ti.	1867
13	"service user*".ab,ti.	6999
14	12 or 13	6999
15	exp "Quality of Health Care"/	8035244
16	11 and 14 and 15	11

Search Strategy for CINAHL:

#	Query	Limiters/Expanders	Last Run Via	Results
S8	S3 AND S6 AND S7	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	5
S7	MW quality of health care or care quality or health care quality or healthcare quality or quality of care or quality of healthcare or quality assurance, health care	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	103,313
S6	S4 OR S5	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	12,572
S5	AB service user OR AB service user*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced	11,276

			Search Database - CINAHL	
S4	TI service user OR TI service user*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	2,888
S3	S1 OR S2	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	17,517
S2	AB core competency framework OR AB core competency framework* OR AB competency framework OR AB competency framework* OR AB ore capabilities framework OR AB core competency OR AB Nursing competen* OR AB Nurse competen* OR AB clinical competen*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	14,692
S1	TI core competency framework OR TI core competency framework* OR TI competency framework OR TI competency framework* OR TI core capabilities framework OR TI core competency OR TI Nursing competen* OR TI Nurse competen* OR TI clinical competen*	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL	6,051

Appendix B: Screening Tools

Abstract screening tool

1	Was the study published between 2013 and 2023?	NO – exclude	YES/UNCLEAR – go to Next
2	Was the study carried out in a high-income country except United State and Canada (as defined by the OECD)?	NO – exclude	YES/UNCLEAR – go to Next
3	Is the article a conference abstracts, dissertations and theses, unreviewed grey literature, delphi study, news, review papers?	NO/Unclear – Go to Next	YES - exclude
4	Was the study published in English?	NO – exclude	YES/UNCLEAR – go to next
5	Does the study sample include qualified nurses or service users receiving care from qualified nurses?	NO – exclude	YES/UNCLEAR – go to next
6	Was the study conducted in hospital or GP practice or community health services?	NO – exclude	YES/UNCLEAR – go to next
7	Does the study focus on simulation training or online training?	NO/UNCLEAR – go to next	YES– exclude
8	Was the main aim of the study to examine the impact of implementing core competencies on nursing training or clinical outcomes or quality of care?	NO – exclude	YES/UNCLEAR – <u>Include for full paper screening</u>

Full paper screening tool

1	Was the study published between 2013 and 2023?	NO – exclude	YES/UNCLEAR – go to next
2	Was the study carried out in a high-income country except United State and Canada (as defined by the OECD)?	NO – exclude	YES/UNCLEAR – go to next
3	Was the study published in English?	NO – exclude	YES/UNCLEAR – go to next
4	Is the article a conference abstracts, dissertations and theses, unreviewed grey literature, delphi study, news, review papers?	NO/Unclear – Go to Next	YES - exclude
5	Does the study sample include qualified nurses or service users receiving care from qualified nurses?	NO – exclude	YES/UNCLEAR – go to next
6	Was the study conducted in hospital or GP practice or community health services?	NO – exclude	YES/UNCLEAR – go to next
7	Does the study focus on simulation training or online training?	NO/UNCLEAR – go to next	YES– exclude
8	Does the paper include at least one of the outcomes listed in the protocol?	NO – exclude	YES/UNCLEAR – go to next
9	Did the study aim to assess core competencies?	NO – exclude	YES/UNCLEAR – go to next
10	Was the main aim of the study to examine the impact of implementing core competencies on nursing training or clinical outcomes or quality of care?		
11	Did the study aim to assess the effectiveness and reliability of specific instrument to measure a core competency?	YES - exclude	NO – <u>Include for full paper review</u>

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