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- **Short informative title**

MENTORS' SELF-ASSESSED COMPETENCE IN MENTORING NURSING STUDENTS IN CLINICAL PRACTICE: A SYSTEMATIC REVIEW OF QUANTITATIVE STUDIES

- **Short running title**

MENTORS' COMPETENCE IN MENTORING NURSING STUDENTS

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ABSTRACT

Aims and objectives: To examine registered nurses' self-evaluation of their competence in mentoring nursing students in clinical practice.

Background: Clinical mentors have significant roles and responsibility for nursing students' clinical learning. Moreover, the mentors' role is becoming increasingly important internationally, as the role of nurse teachers in mentoring students in clinical practice has declined. However, in most EU countries there are no specific educational requirements for clinical mentors, although they need targeted education to increase their competence in mentoring nursing students.

Design: The systematic review of quantitative studies was designed according to guidelines of the Centre for Reviews and Dissemination and PRISMA protocol.

Methods: Studies published during 2000-2019 that met inclusion criteria formulated in PICOS format were systematically reviewed by three independent reviewers. CINAHL (Ebsco),

PubMed (MEDLINE), Scopus, ERIC, and Medic databases were used to retrieve the studies. Three independent reviewers conducted the systematic review process. The studies were tabulated, thematically compared and narratively reported.

Results: In total, 16 peer-reviewed studies met the inclusion criteria. The studies identified various dimensions of mentors' competence and associated environmental factors. Generally, participating mentors rated competences related to the clinical environment, mentoring, supporting students' learning processes and relevant personal characteristics fairly high. They also rated organizational practices in their workplaces, resources in the clinical environment and their mentor-student and mentor-stakeholder pedagogical practices, as respectable or satisfactory.

Conclusion: The results indicate considerable scope for improving mentors' competence, particularly through enhancing organizational mentoring practices and relevant resources in clinical environments.

Relevance for clinical practice: Pedagogical practices of mentors in relations with both students and stakeholders should be enhanced to improve future nurses' learning. This systematic review addresses a gap in knowledge of mentors' self-evaluated competence that could assist the formulation of effective educational programs for mentors internationally and improving clinical environments.

Keywords: nurse, mentors, mentoring, competence, clinical environment, systematic review

What does this paper contribute to the wider global community?

- Requirements for meeting students' mentoring competence include far more than competence in mentor-student pedagogical practices.
- Mentors require various personal characteristics, attitudes, values, motivation, involvement, satisfaction, problem-solving abilities and commitment to their work.
- There are also needs for organizational practices in the workplace and resources in the clinical environment that facilitate and promote learning, together with fruitful collaboration and support of stakeholders in universities.
- Mentors' competences in pedagogical practices include abilities to identify students' individual learning needs, support students' learning processes, orientate students towards their own learning goals, foster students' motivation, conduct student-centered evaluation, reflect upon students' performance, provide constructive feedback, and understand nursing competence as defined in mentored students' curricula.
- The studies also clearly identify a need for regular targeted education, as part of mentors' continuous development.

Introduction

Healthcare is provided in complex, rapidly changing environments, so healthcare workers require flexible, multi-dimensional competence, e.g., in clinical procedures and relational issues, teamwork, professional awareness and patient-centeredness. Nurses are important workers in healthcare (Allen, 2018) and their clinical competences are mainly developed in clinical environments (Directive 2013/55/EU of the European Parliament and of the Council). In the European Union (EU), half of nursing students' education should be provided in clinical environments (Directive 2013/55/EU). Thus, the quality of clinical environments, in terms of fostering their learning, substantially affects their development of professional competence (Directive 2013/55/EU; European Federation of Nurses Association Competency Framework, 2015; Salminen et al., 2010; World Health Organization, 2006). Clinical mentors have significant roles and responsibility for nursing students' clinical learning (Perry, Henderson, & Grealish, 2018; Warne et al., 2010). Thus, they need pedagogical expertise in guiding clinical reasoning and provision of professional role models for students. This is essential because mentors ideally should: convey the culture, ethics and values of nursing; provide guidance and

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teaching; display decision-making competences in teamwork; and while providing and planning nursing care, develop nursing care and leadership (EFN, 2015).

For these reasons, the mentor-student pedagogical relationship is pivotal for students' satisfaction (Papastavrou, Dimitriadou, Tsangari, & Andreou, 2016; Vizcaya-Moreno, Pérez-Cañaveras, Jiménez-Ruiz & de Juan, 2018). Moreover, the mentors' role is becoming increasingly important internationally, as the role of nurse teachers in mentoring students in clinical practice has declined (Warne et al., 2010). Now, both clinical mentors and nurse teachers are responsible for supporting students' learning, and consequently mentor's workloads have increased (Dobrowolska et al., 2016; Omansky, 2010). However, in most EU countries there are no specific educational requirements or education for clinical mentors (Dobrowolska et al., 2016), although they need targeted education to increase their competence in mentoring nursing students (Hvalič-Touzery et al., 2017; Jack et al., 2018; Pitkänen et al., 2018). In countries such as Croatia, Czech Republic, Poland, Ireland, the UK, and the US, mentoring practices are regulated by national policies and requirements (Dobrowolska et al., 2016), which enhances the quality of mentoring practices. For example, the British Nursing and Midwifery Council (NMC), has developed guidelines for nursing education and student assessment (NMC, 2018).

Several factors have been identified that can strongly influence students' experiences and development of nursing competence. Co-operation between universities and providers of clinical learning environments reportedly enhances students' learning experiences (Hooven, 2015), and nurses' work engagement correlates with students' experiences in clinical environments (Tomietto et al., 2016). In addition to adapting to changes in educational responsibilities, healthcare policy and workers need to ensure the sustainability of healthcare, improve cultural contexts, continuously strive to eliminate discrimination, and enable provision of high quality education (Mikkonen, Elo, Miettunen, Saarikoski, & Kääriäinen, 2017; WHO, 2016; WHO, 2018). Evidence shows that students' learning experience is strongly related to their professional development of nursing competence (Chesser-Smyth & Long, 2013; Papastavrou et al., 2016; Perry et al., 2018; Walker, Dwyer, Moxham, Broadbent, & Sander, 2013). We perceive a need to collect the evidence relating both to mentors' competences and gaps in their competences to facilitate the formulation of effective programs to enhance mentors' education, clinical learning environments for students, and hence the development of nursing students' competence. To assist

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efforts to meet the perceived need, this paper provides a systematic review of quantitative analyses of mentors' self-evaluated competence in mentoring nursing students.

Clinical practice is a crucial part of a nurse's education and clinical competence development (Flott & Linden, 2016; Jokelainen, Turunen, Tossavainen, Jamokeeah & Coco, 2011), as it shapes nursing students' professional role, behavior, attitudes and values (Sandvik, Eriksson, & Hilli, 2014; Newton, J. M., Jolly, Ockerby, & Cross, 2010). Clinical environments are multidimensional, and described as physical and psychosocial spaces with complex organizational cultures and learning settings (Flott & Linden, 2016). In these complex learning environments, nursing students transfer theory into practice (European Federation of Nurses Association Competency Framework, 2015; Flott & Linden, 2016; Ford et al., 2016). Clinical competence development commonly starts with simulative environments and clinical laboratories, where students are offered a chance to practice safely without a risk of making mistakes on real patients (Ayers et al., 2015). However, sociocultural aspects when taking care of a real authentic patient inevitably affect their learning in clinical environments (Jessee, 2016), and some aspects may promote or inhibit students' learning (Bisholt, Ohlsson, Engström, Johansson, & Gustafsson, 2014).

Clinical competence is a key element of nurse students' transition to professionalism, so their learning environments must provide appropriate settings and meaningful situations that foster it (Flott & Linden, 2016; Hickey, 2010). Students need competence in handling cultural and ethical issues, health promotion and counselling, decision-making, communication skills and collaboration with other healthcare workers, individuals and families. They have to develop their work practices using evidence-based knowledge and decision-making abilities to provide safe care (Directive 2013/55/EU of the European Parliament and of the Council; European Federation of Nurses Association Competency Framework, 2015).

Various terms have been used for mentors, including preceptors (Hilli, Melender, Salmu, & Jonsén, 2014; McSharry & Lathlean, 2017; O'Brien et al., 2014), clinical facilitators (Courtney-Pratt, FitzGerald, Ford, Marsden, & Marlow, 2012) and supervisors (Pitkänen et al., 2018). However, regardless of the term used, the core element of the role is to take charge of students' clinical learning (Saarikoski, 2017). Here, clinical mentors are defined as registered nurses (RNs) who are responsible for nursing students' learning processes by guiding and promoting their

learning (Hilli et al., 2014; Jokelainen et al., 2013; Löfmark, Thorkildsen, Råholm, & Natvig, 2012; Walker et al., 2013). Mentoring relationships and individualized support for students have recognized impact on the effectiveness of clinical learning (Courtney-Pratt et al., 2012; Dimitriadou, Papastavrou, Efstathiou, & Theodorou, 2015; Ford et al., 2016; McSharry & Lathlean, 2017; Warne et al., 2010) and can promote effective transition from undergraduate education to a post-graduation professional career (Lavoie-Tremblay et al., 2019). Mentorship also requires organizational support through cooperation with colleagues and nurse management on both ward and hospital levels (Jokelainen et al., 2013). Mentors must also work with stakeholders by involving them in students' clinical learning (Flott & Linden, 2016), because (for example) nurse teachers have deeper knowledge of curricula while clinical mentors' strength is in clinical competence (Helminen et al., 2016). Mentors play important pedagogical roles in supporting students (Manninen, Welin Henriksson, Scheja, & Silén, 2015; Papastavrou et al., 2016; Sandvik et al., 2014), and they can enhance students' professionalism by assessing their performance and giving feedback (Jansson & Ene, 2016; McSharry & Lathlean, 2017; Sandvik et al., 2014, Jokelainen et al., 2011). However, mentors need pedagogical support from nurse teachers, especially in challenging situations (Jokelainen et al., 2013).

Mentors must balance time spent caring for patients and mentoring students, often with tight time constraints (Helminen et al., 2016; Huybrecht, Loeckx, Quaeys, De Tobel, & Mistiaen, 2011; Jokelainen et al., 2013; O'Brien et al., 2014). Partly for this reason, many mentors reportedly experience stressful situations connected to mentorship (Jansson & Ene, 2016). They also need specific competences and help in supporting unmotivated students (Courtney-Pratt et al., 2012), assessing students' level of competence and giving feedback (Almalkawi, Jester, & Terry, 2018; Helminen et al., 2016). Having the same clinical mentor during a clinical practice may be pedagogically beneficial for students (Sundler et al., 2014; Pitkänen et al., 2018). Potentially this may also be generally true for mentors, especially if there are diverse groups of students, with varied needs, to mentor.

Mentors have reported needs for support from nurse teachers (Helminen, Coco, Johnson, Turunen, & Tossavainen, 2016; O'Brien et al., 2014), especially when handling reflection and supporting students' learning about ethical issues in nursing care (Hilli et al., 2014). Moreover, mentors may need support to face challenging students or properly manage critical evaluations

(Hall-Lord, Theander, & Athlin, 2013). Additionally, mentors require cultural competence in mentoring culturally diverse students with globalization becoming a common influence in healthcare (Mikkonen, Elo, Kuivila, Tuomikoski, & Kääriäinen, 2016; Newton, Pront, & Giles, 2016). Poor attitudes etc. will have negative rather than positive effects, so we would prefer. Mentors' attitudes, motivation (Doyle et al., 2017) and work-engagement (Tomietto et al., 2016) all affect students' learning.

A previous systematic review of qualitative studies on mentors' competence defined several mentoring competences (Tuomikoski, Ruotsalainen, Mikkonen, & Kääriäinen, 2019). These included competence in building reciprocal, trusting and appropriate relationships with students, identifying students' current level of competence, setting individual learning objectives, as well as reflection on and evaluation of students' learning (Tuomikoski et al., 2019). Nursing students reportedly find that individual, supportive and goal-oriented supervision is beneficial in clinical practice (Pitkänen et al., 2018) and mentors' linguistic competence is important for cultivation of a comfortable pedagogical atmosphere for international students (Mikkonen et al., 2017).

Aims and Methods

The aims of this systematic review were to gather and synthesize the best available evidence regarding RNs' self-evaluation of their competence in mentoring nursing students in clinical practice. The research question specifically addressed was: What competences (and degrees of competences) do mentors have in mentoring nursing students?

Design

The systematic review of quantitative studies on nurse mentors' self-evaluated competences was designed according to guidelines of the Centre for Reviews and Dissemination (Centre for Reviews and Dissemination, 2009) and Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement, Supplementary File 1) protocol (Moher, Liberati, Tetzlaff, & Altman, 2009). The searching protocol was formulated according to PICOS principles (Centre for Reviews and Dissemination, 2009).

Search methods

A three-step searching process was applied in autumn 2018. In the first step, MEDLINE and CINAHL databases were searched to identify index terms (Aromataris & Riitano, 2014). In the second step (in November 2018) terms and keywords were used to search all selected databases: CINAHL (Ebsco), PubMed (MEDLINE), Scopus, ERIC, and the Finnish database Medic (see Supplementary File 2). These were identified as the most relevant to the focal topic (Aromataris & Riitano, 2014). Grey literature was not included in the searching. An information specialist was used to ensure the quality of keywords. The third step was a manual search, in which the researchers each read full texts of the identified literature to gather further studies from secondary literature. This is recognized as a valuable approach for identifying pertinent studies that might otherwise be missed.

PiCOS (P=participants; C=context; O=outcomes; S=study design) inclusion criteria (shown in Table 1) were applied when selecting papers to ensure that they were relevant to the study (Centre for Reviews and Dissemination, 2009). Participants in identified studies included RNs (or international equivalents), who had mentored undergraduate students in clinical learning environments (including primary and specialized healthcare settings). Studies with participants who were not RNs (or international equivalents), simulated environments, or outcomes other than RNs' self-assessed competence in mentoring nursing students (with quantitative results), were all excluded. A systematic review of qualitative studies regarding the focal phenomenon has been reported (Tuomikoski et al., 2019). Thus, this review covered studies with descriptive designs, including case series, individual case reports, and descriptive cross-sectional studies that presented solely quantitative results, and quantitative elements of mixed (qualitative and quantitative) method studies. We included studies published in English, Swedish, Finnish, Slovenian, Spanish, Italian and Lithuanian (languages in which the authors were sufficiently fluent for screening) between the years 2000 and 2019. Earlier studies were excluded because nursing education has changed substantially in recent years.

Search outcomes

The search outcomes are summarized in the PRISMA flow diagram (Moher et al., 2009) presented in Figure 1. Initially, 1239 studies were retrieved (Table 2) and screened by title (n=1239), abstract (n=137), and full-text (n=44) by three independent researchers (SPS, KM, JJ). Common reasons for exclusion were mismatches with the PICOS criteria in terms of participants, context (simulation rather than real clinical environment), assessment of mentors' competence by healthcare professionals other than RNs themselves, language or publication date. The quality assessment of the remaining studies (n=14) was performed by all the researchers (SPS, KM, JJ) separately. After the assessment 12 studies remained. Five additional studies were identified manually by screening references of the 12 chosen studies (SPS, JJ) and were also assessed for quality assessment (SPS, JJ). Thus, in total, after screening and quality assessment, 16 studies were chosen for final data synthesis. All search references were stored in RefWorks software.

Quality appraisal

After title screening, 19 original studies were critically appraised by three independent reviewers (SPS, KM, JJ). A study in Spanish (Cervera-Gasch et al., 2018), was assessed by two other independent reviewers (FVM, RPC), and one in Slovenian (Meden et al., 2017) was assessed by two other independent reviewers (BMK, TRK). Consensus in the critical appraisals was reached by each group of independent reviewers. The quality threshold for retention of a study was set at > 50% of the maximum possible points according to the MASTARI critical appraisal tool (The Joanna Briggs Institute, 2018) (see Supplementary File 3). Three studies (Hyrkäs & Shoemaker 2007; McCallum et al., 2016; Palmer et al., 2005) that received lower scores were excluded. A common criterion for exclusion was poor methodological quality or lack of report on the methodological process in the studies.

Data extraction and synthesis

Data extraction was done according to study aim and research question (Munn, Turanaru, & Aromataris, 2014). The relevant data from the studies were assembled by the authors, country of

origin, the aim of the study, participants, sample size, study methods, instruments and key findings (Centre for Reviews and Dissemination, 2009) (see Table 3). As recommended by Polit and Beck (2017) findings relevant to the research question of the review were first tabulated according to recognized competences for mentoring nursing students and associated environmental factors (Table 4). Findings of studies that reported data regarding single descriptive items, without providing clear areas of mentor competence, were synthesized by thematic synthesis (see Figure 2), a widely used approach for gathering, analyzing and synthesizing relevant data into categories (Nicholson, Murphy, Larkin, Normand, & Guerin, 2016; Whitemore & Knafl, 2005). Here, data about mentors' competence were categorized via line-by-line coding, then descriptive and analytical themes were identified with an inductive approach (Nicholson et al., 2016). The line-by-line coding was initially done by one of the researchers (SPS), then confirmed by the other two researchers (KM, JJ). All of the outcomes were reported narratively (Munn et al., 2014).

RESULTS

Characteristics of included studies

The studies included in the systematic review were published between 2009 and 2018 (see Table 3). They were conducted in Australia (McInnes, Peters, Hardy, & Halcomb, 2015), Finland (Helminen, Johnson, Isoaho, Turunen, & Tossavainen, 2017; Kälkjä et al., 2016; Karjalainen et al., 2015; Oikarainen et al., 2018; Ruuskanen et al., 2017; Tuomikoski, Ruotsalainen, Mikkonen, Miettunen, & Kääriäinen, 2018), Ireland (Heffernan, Heffernan, Brosnan, & Brown, 2009), Saudi Arabia (Omer, Suliman, & Moola, 2016), Slovenia (Meden, Kvas, & Hoyer, 2017; Skela-Savič & Kiger, 2015), Spain (Cervera-Gasch et al., 2018), Sweden (Hall-Lord, Theander, & Athlin, 2013), Sweden and Norway (Borch, Athlin, Hov, & Sörensen Dupplis, 2013) and the USA (Morrison & Brennaman, 2016; Smith, Swain, & Penprase, 2011). Most were descriptive cross-sectional studies (Hall-Lord et al., 2013; Heffernan et al., 2009; Helminen et al., 2017; Kälkjä et al., 2016; Karjalainen et al., 2015; McInnes et al., 2015; Morrison & Brennaman, 2016; Skela-Savič & Kiger, 2015; Smith et al., 2011; Tuomikoski et al., 2018). Designs of a few were descriptive and comparative (Borch et al., 2013; Omer et al., 2016), observational, cross-sectional and descriptive (Cervera-Gasch et al., 2018), descriptive (Meden et al., 2017) or

descriptive, cross-sectional and exploratory (Oikarainen et al., 2018). Only one had a quasi-experimental design (Ruuskanen et al., 2017).

In the studies, mentors' competence was self-assessed with instruments including: unnamed instruments developed by the authors (Borch et al., 2013; Hall-Lord et al., 2013; Heffernan et al., 2009; Helminen et al., 2017; McInnes et al., 2015; Meden et al., 2017; Omer et al., 2016; Skela-Savič & Kiger, 2015; Smith et al., 2011); the Involvement, Motivation, Satisfaction, Obstacles and Commitment Instrument (Cervera-Gasch et al., 2018); Mentor's Competence Instrument (MCI) (Kälkjä et al., 2016; Karjalainen et al., 2015; Oikarainen et al., 2018; Ruuskanen et al., 2017; Tuomikoski et al., 2018) and Nursing Students' Contributions to Clinical Agencies (NSCCA) instrument (Morrison & Brennaman, 2016). Validated instruments are categorized in terms of competence areas covered in Table 4. In the chosen studies, there were single-item instruments, for which robust indications of construct validity are not available, and items were analyzed as descriptive data in thematic analysis (Nicholson et al., 2016; Whittemore & Knafl, 2005), results of which summarized in Figure 2.

Mentors' competence

The studies reported RNs' self-assessed competence in mentoring nursing students and associated environmental factors in various dimensions (see Table 4). Mentoring practices in the workplace and resources were assessed as highly in several studies (Kälkjä et al., 2016; Morrison & Brennaman, 2016; Ruuskanen et al., 2017; Tuomikoski et al., 2018). Pedagogical practices of mentors with respect to both students and the students' host universities were as rated satisfactory in studies by Kälkjä et al. (2016) and Tuomikoski et al. (2018). McInnes et al. (2015) found that only a third of mentors (32%) regarded themselves as enablers of students' clinical placements.

Mentors' identification of students' needs for mentoring was rated well (Oikarainen et al., 2018; Tuomikoski et al., 2018). Several studies noted that mentors require competence in goal-orientation in mentoring and supporting students' learning processes (Karjalainen et al., 2015; Oikarainen et al., 2018; Ruuskanen et al., 2017; Tuomikoski et al., 2018) and student motivation (Kälkjä et al., 2016; Meden et al., 2017; Oikarainen et al., 2018). Meden et al. (2017) found that up to 86% of mentors rated their motivation of students as at least satisfactory.

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Five studies found that mentors rated their competence in student-centered feedback and evaluation positively (Helminen et al., 2017; Karjalainen et al., 2015; Oikarainen et al., 2018; Ruuskanen et al., 2017; Tuomikoski et al., 2018), but students surveyed by Helminen et al. (2017) rated their mentors less highly in this respect. In addition, Meden et al. (2017) reported that 58% of mentors included reflection during their mentoring, supported with the ability to use evaluation tools. Other studies also found that mentors regarded their reflection during mentoring (Oikarainen et al., 2018; Ruuskanen et al., 2017; Tuomikoski et al., 2018) and provision of feedback (Oikarainen et al., 2018; Tuomikoski et al., 2018) as fairly high.

Several studies have defined personal characteristics as one of the competence areas for mentoring (Kälkjä et al., 2016; Oikarainen et al., 2018; Ruuskanen et al., 2017; Tuomikoski et al., 2018). In the study by McInnes et al. (2015), 77% of participating mentors reported a personal desire to guide nursing students in clinical practice. Similarly, Meden et al. (2017) found that 75 % of mentors were highly motivated. Other important personal qualities for mentoring that emerged were involvement, satisfaction, attitudes to obstacles and commitment (Cervera-Gasch et al., 2018).

In the thematic analysis, the descriptive data were categorized in four analytical themes (Figure 2): *Mentors' competence in nursing and continuous professional development*, *Supporting students' learning processes*, *The clinical learning environment and mentoring for students*, and *Mentors' characteristics and attitudes*. Mentors' competence in nursing and continuous professional development reportedly includes their theoretical competence in nursing (Borch et al., 2013; Hall-Lord et al., 2013; Heffernan et al., 2009; Omer et al., 2016), clinical competence (Borch et al., 2013; Hall-Lord et al., 2013; Heffernan et al., 2009; Morrison & Brennaman, 2016; Smith et al., 2011), competence in verifying patient safety culture and nursing ethics (Omer et al., 2016; Skela-Savič & Kiger, 2015) and professional development through regular education (Heffernan et al., 2009; Smith et al., 2011). Supporting students' learning processes (in clinical learning environments) reportedly encompasses understanding students' curricula (Hall-Lord et al., 2013; Heffernan et al., 2009), competence in goal-orientation (Borch et al., 2013; Hall-Lord et al., 2013; Omer et al., 2016; Smith et al., 2011), practicing student-centered mentoring (Borch et al., 2013; Omer et al., 2016; Smith et al., 2011), ability to evaluate students (Hall-Lord et al., 2013; Heffernan et al., 2009; Omer et al., 2016; Smith et al., 2011), and provision of regular,

constructive feedback (Borch et al., 2013; Hall-Lord et al., 2013; Heffernan et al., 2009). The clinical environment and mentoring for students covers mentoring practices in the workplace (Omer et al., 2016; Smith et al., 2011), support from stakeholders (Hall-Lord et al., 2013; Omer et al., 2016) and collaboration with stakeholders (Borch et al., 2013; Hall-Lord et al., 2013; Omer et al., 2016). Finally, mentors' characteristics and attitudes include personal factors (Heffernan et al., 2009; Morrison & Brennaman, 2016; Smith et al., 2011), attitudes towards mentoring (Heffernan et al., 2009; Smith et al., 2011), values (Heffernan et al., 2009) and motivation in mentoring (Borch et al., 2013; Heffernan et al., 2009; Smith et al., 2011).

DISCUSSION

The aim of this systematic review was to gather and synthesize the best available evidence regarding RNs' self-evaluation of their competence in mentoring nursing students in clinical practice. According to the reviewed studies, requirements for meeting students' mentoring competence include far more than competence in mentor-student pedagogical practices. Mentors require various personal characteristics, attitudes, values, motivation, involvement, satisfaction, problem-solving abilities and commitment to their work. There are also needs for organizational practices in the workplace and resources in the clinical environment that facilitate and promote learning, together with fruitful collaboration and support of stakeholders in universities. Mentors' competences in pedagogical practices include abilities to identify students' individual learning needs, support students' learning processes, orientate students towards their own learning goals, foster students' motivation, conduct student-centered evaluation, reflect upon students' performance, provide constructive feedback, and understand nursing competence as defined in mentored students' curricula. The studies also clearly identify a need for regular targeted education, as part of mentors' continuous development.

Participants in the studies rated practices in workplaces and resources as respectable. However, more nuanced insights have been provided by studies not included in the review. For example, some students have reportedly been dissatisfied because mentors lacked time for mentoring due to heavy workloads and stress (Eller, Lev, & Feurer, 2014; Huybrecht et al., 2011; Sundler et al., 2014). Similarly, the importance of mentors spending time with students to improve the students' critical thinking (Dobrowolska et al., 2016), and organizational support to assist mentors in supporting students (Jokelainen, Jamooskeah, Tossavainen, & Turunen, 2013) has been noted.

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Ward managers are commonly responsible for allocating resources, designing nursing care delivery in the ward, and (hence) setting the time available for mentoring by managing mentors' workloads, and scheduling students' clinical learning activities (Pohjamies, Haapa, Seilola, & Meretoja, 2018). However, Pitkänen et al. (2018) found that nursing students rated the ward manager's role in clinical learning less highly than other healthcare students. This was at least partly because the students had difficulties in perceiving the ward manager's role, which could be tacit or hidden from students. The importance of avoiding excessive numbers of students in wards has been recorded (Courtney-Pratt et al., 2012), and students reportedly find both nurses' workloads and frequent changes of mentor in clinical practice stressful (Jansson & Ene, 2016). Pitkänen et al. (2018) and Sundler et al. (2014) also found that having the same mentor during whole practice periods is important for maintaining good supervisory relationships. In addition, confidentiality in student-mentor relationship is valued by both students and mentors (Courtney-Pratt et al., 2012), and having numerous mentors can impair students' learning outcomes (Sundler et al., 2014), especially when there are no integrative tools to promote a clear, shared definition of the students' goals, competence assessment criteria and evaluation procedures (Lunenburg, 2012).

Participating mentors in the reviewed studies rated their pedagogical practices in relation to both students and universities as satisfactory. Other studies have found that nurse teachers' commitment is beneficial for whole learning teams' clinical practice (Bradbury-Jones, Irvine, & Sambrook, 2010). Moreover, nurse teachers can support mentors' clinical competences by sharing their knowledge about nursing curricula and their methodological expertise (Helminen et al., 2016). Mentors may feel dissatisfaction when they have responsibilities for unmotivated or challenging students (O'Brien et al., 2014) and need more support from nurse teachers in these situations. Mentors also value their support when they face challenges in assessing students' competence for passing or failing students in clinical practice (Douglas, Garrity, Shepherd, & Brown, 2016). Continuous guidance and discussions through practice are essential for students, because it is easier to adopt practices according to one's levels of knowledge and skills (McSharry & Lathlean, 2017). Despite the great importance of the involvement of nurse teachers in clinical practices, their role is being increasingly withdrawn from clinical practice and becoming more indirect across Europe. That organizational change will increase the role and responsibility of mentors in guiding nursing students' learning and development of clinical

competence (Warne et al., 2010). Nevertheless, in most EU countries, the academic system is responsible for nursing students' evaluation and certification of their clinical competence. The United Kingdom is an exception to this practice. Mentoring practices are clearly defined and guided there by the national Nursing & Midwifery Council, which regulates that accredited clinical practices and their mentors have the authority to perform the evaluation of students' progress in clinical competence development (NMC, 2018).

Mentors have generally rated their competence in identifying students' needs for mentoring, supporting students' learning processes, goal-oriented mentoring, and motivating students as good. However, lack of self-confidence can adversely affect students' motivation, and both negative attitudes of mentors and failure to communicate reportedly have negative effects on students (Chesser-Smyth & Long, 2013). Students have felt unsatisfied with newly graduated mentors (Sundler et al., 2014), and may feel frustrated if their mentors do not know their learning needs, which frequently occurs when students' mentors change during a learning period (Ford et al., 2016). In addition, mentors' education is reportedly positively correlated with students' perceptions of them (O'Brien et al., 2014), and an expert clinical nurse could be a novice mentor (Weidman, 2013). Thus, continuous development of their mentorship through targeted education is important. Mentors cannot have all the required expertise from the start and they must continuously improve their mentorship through academic support, education, nurse teacher coaching and, of course, experience with students (Dracup & Bryan-Brown, 2004). Moreover, nurse teachers should know students' characteristics and mentors' competence levels to match students and mentors appropriately in order to optimize prospects of fruitful mentorship experiences and effective clinical learning (Zlatanovic et al., 2017).

Mentors participating in the reviewed studies also generally rated their student-centered evaluation and feedback as good. An important factor for this may be continuous interaction, which facilitates evaluation of students' progress and adjustment of guidance, according to McSharry & Lathlean (2017). Participating mentors also rated their reflection during mentoring and provision of regular and constructive feedback highly. However, Meden et al. (2018) reported a need for support in evaluation, with implementation of assessment tools, in clinical practice. It should also be recognized that evaluating students may be challenging because of diversity of their backgrounds and clinical learning periods (Huybrecht et al., 2011). In addition,

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lack of clarity or ambiguity in assessment tools may exacerbate difficulties in giving constructive feedback or using certain criteria for evaluating students' competence (Almalkawi et al., 2018). Such difficulties may cause misunderstandings between mentors and students regarding nursing practice, which may compromise patients' safety (Almalkawi et al., 2018).

Several factors that may ameliorate or exacerbate related problems have been identified: mentors may need nurse teachers' support and expertise in making evaluations at the start of clinical practice periods, before final summative evaluations (Helminen et al., 2016); mentors' attitudes affect their evaluations of students, decision-making and provision of constructive feedback (Burden, Topping, & O'Halloran, 2018); reflective discussion between mentors and students enhances students' knowledge and clinical reasoning (McSharry & Lathlean, 2017); a further, increasingly important skill is the cultural competence required to mentor international students, who may feel unsupported and face severe communication challenges because of language barriers (Mikkonen et al., 2017; Pitkääjärvi, Eriksson, & Pitkäälä, 2012). Such students reportedly need more support from nurse teachers than native students (Mikkonen et al., 2017). Intercultural mentors may also be highly beneficial for culturally and linguistically diverse students, especially for facilitating their learning and coping with stressful situations in clinical practice (Mikkonen et al., 2016).

Mentors participating in the reviewed studies evaluated their competence in merging theoretical and clinical skills, and conveying a professional culture centered on patients' safety and nursing ethics, as fairly high. Other studies have also provided additional insights regarding these aspects. *Inter alia*, students may have difficulties in reaching their learning goals if the clinical environment does not provide independent space to practice, and positive environments increase frequencies of positive experiences (Bisholt et al. 2014). Mentors need to ensure patient safety in their care and daily clinical practice (Directive 2013/55/EU of the European Parliament and of the Council; European Federation of Nurses Association Competency Framework, 2015). Moreover, students have expressed a need for mentors to be near them and provide guidance to combine theory and practice (Sandvik et al., 2014), and found that the student-mentor relationship is more important for learning than the student-patient relationship (Ford et al., 2016). However, competence to guide students' clinical reasoning to bridge the theory-practice

gap is essential to prevent undergraduate education to professional practice transition shock (Duchscher, 2009).

Mentors participating in the reviewed studies rated their relevant characteristics highly. As already mentioned, attitudes, values, motivation, involvement, satisfaction and commitment are all regarded as elements of mentors' competence. Students' learning is reportedly enhanced by communication, collaboration and interaction with their mentors, and dialogical teaching methods (Chuan & Barnett, 2012; McSharry & Lathlean, 2017). Moreover, mentors' motivation is apparently increased by students asking questions and showing clear signs of professional interest, while lack of mentors' encouragement to make students feel part of the nursing team impairs students' experiences in clinical environments (Ford et al., 2016). Good experiences in mentoring increase nurses' retention (Ward & McComb, 2018), and positive attitudes, engagement and dedication of healthcare workers enhance learning environments (Tomietto et al., 2016). In addition, planning clinical practices improves mentors' attitudes (O'Brien et al., 2014), and mentors play important roles as role models (ideally displaying high levels of professional patient-centeredness and leading by example) in developing students' professional identity (Felstead and Springett, 2016).

Finally, to improve mentoring in clinical learning environments, regular mentor education needs to be planned together with the goals for nurses' individual career growth. Education is valuable for enhancing mentoring competence according to O'Brien et al. (2014), and both mentors and students have expressed wishes for further basic and advanced level education (Hvalič-Touzery et al., 2017; Jack et al., 2018; Pitkänen et al., 2018). Education helps mentors not only to develop pedagogical competences, but also to improve their knowledge of nursing curricula and bridge the theory-practice gap, which often hinders clinical learning and contributes to the shock of transition from undergraduate education to a professional nursing career (Duchscher, 2009; Lavoie-Tremblay et al., 2019).

Limitations and strengths

This review has several limitations and strengths. We are confident that the most relevant databases were selected for searching, and we included studies published in seven languages. Grey literature was not covered in the searches to avoid compromising the quality and reliability of chosen studies. Some of the selected studies did not report their instruments' construct validity

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and reported scores obtained for individual items, which made data tabulation challenging. This fact, together with heterogeneity in the scales and in the quantitative methods adopted, did not allow the performing of a meta-analysis based on the quantitative studies selected. Due to this, the descriptive data were subjected to a thematic analysis, which is commonly used to process and interpret qualitative data. In the thematic analysis, one researcher was responsible for the coding and analysis of some of the studies. Reliability could have been increased by two researchers separately undertaking these tasks, then comparing their results (Thomas & Harden, 2008). However, reliability was strengthened by involving another two researchers in final stages of outcome analysis. A substantial proportion of the studies were conducted in Finland, and as clinical practices vary among countries, more high-quality studies with a broader international perspective would have strengthened outcomes of the review. Finally, the mentors participating in most of the reviewed studies generally rated their competence as high, indicating that at least some of them may have over-rated their own competence. At the same time, the mentors may have been unable to perform a fully informed evaluation of themselves as they lacked education relating to this topic.

CONCLUSION

Clinical practice in real complex and rapidly changing environments is crucial for nursing students to develop core competences and transfer theory into practice. In recent years, nursing teachers' role in students' learning in clinical environment has decreased. Accordingly, mentors are playing an increasingly significant role in supporting students' clinical competence and professional growth. However, they face challenges in evaluation skills and collaboration with nurse teachers. This systematic review indicates that there is scope for improving mentoring by improving organizational mentoring practices in workplaces, and increasing mentoring resources.

Relevance for clinical practice

The results regarding pedagogical interactions between mentors and both students and collaborating stakeholders should be considered in further educational interventions for mentors. We suggest that the outcomes of this review could be used to improve the effectiveness of both basic and more specialized levels educational programs. To enhance mentors' competence, relevant educational programs could potentially be treated as compulsory elements

of clinical practice and organizational systems could be adjusted to provide incentives for suitable staff to engage in mentoring practices.

Conflict of Interest statement

No conflict of interest has been declared by the authors.

Table 1

Inclusion and exclusion criteria formulated in PICOS format

Criteria	Inclusion	Exclusion
Participants	Registered nurses ($\geq 50\%$) (or their international equivalents)	Health professionals other than nurses
Context	Clinical learning environments including primary and specialized healthcare	Educational simulated environments
Outcome	Nurses' self-assessed competence in mentoring nursing students**	Outcomes other than competence in mentoring nursing students Outcomes measured by individuals other than the nurses themselves
Type of studies	Descriptive study designs, including case series, individual case reports, and descriptive cross-sectional studies providing solely quantitative results, or quantitative elements of mixed (quantitative and qualitative research), randomized controlled trials, quasi-experimental studies, and peer-reviewed original studies	Systematic/literature reviews, qualitative research, non-peer-reviewed studies

Publication years	Post 2000	Pre 2000
Languages	English, Finnish, Swedish, Slovenian, Spanish, Italian and Lithuanian	Other languages

Table 2. Databases searched and numbers of studies retrieved from them using search terms listed in Supplementary File 1.

Databases	Number of original studies
Cinahl (Ebsco)	684
PubMed	220
Medic	57
Scopus	414
Total	1376
Duplications	137

Table 3. Summary of data extracted from original studies with quality assessment scores

Original studies, country	Purpose	Participants	Methodology: design, data collection, data analysis	Key findings	Quality assessment (MAStARI)
Borch et al. 2013, Sweden, Norway	To investigate preceptors' perceptions of their ability and satisfaction in their role before and after participation in group supervision for a year and to describe their perceptions of the supervision model	Nurses (n=64), working as preceptors of prequalified nursing students in hospital or community care in Sweden or Norway	Descriptive and comparative design: Two questionnaires were used: The self-developed baseline survey consists of demographic data, nurses' perceptions on their own ability to fulfil the requirements from the nursing college, and their satisfaction in the preceptor role related to the academic nursing education. The follow-up survey was in two parts; first part containing the same questions as in the baseline and second part containing a questionnaire (Lindgren et al. 2005) with questions about structure and climate factors in the group supervision model used, measuring the importance and realization. In addition, the preceptors' experience of group supervision was asked. The project consisted of ten group meetings lasting 2 hours. Likert scale 1-4. Descriptive statistics, Wilcoxon sign rank test and dichotomous variables (StatView 5.0, p≤0.05)	Most of the preceptors (≥97%) were satisfied with their skills and knowledge before and after the intervention, and there was no significant change in these respects. However, relative to baseline numbers, after the intervention significantly more of them encouraged students to read studies (15 and 10%, respectively), provided emotional support through supervision (33 and 25%, respectively) and gave feedback at the end of the day (29 and 22%, respectively). In contrast, fewer nurses discussed students' educational tasks after participating in group supervision than before. Most of the preceptors (95%) had positive feelings, had received support (44% before and 72% after the intervention), and felt safe and secure (11 and 25%, respectively).	6
Cervera-Gasch et al. 2018, Spain	To evaluate the level of participation of clinical nurses and identify variables that may influence clinical nurses'	Clinical nurses (n = 117) tutoring nursing students from Jaume I	Observational, cross-sectional and descriptive design; electronic survey sent by email. Spanish IMSOC (Involvement, Motivation,	Participants evaluated their involvement, motivation, satisfaction, obstacles and commitment. There were significant relationships between overall average scores and both work	8

	participation in students' clinical mentorship	University, (Castellón, Spain)	Satisfaction, Obstacles and Commitment) questionnaire with 33 items and 8 demographic items Likert-scale 1-5. Descriptive statistics, plus Kolmogorov-Smirnov, Kruskal-Wallis, Mann-Whitney U and Spearman tests (SPSS), $p < 0.05$	environment (highest for workers in healthcare centers) and previous mentoring training.' OR 'Participants rated their involvement, motivation, satisfaction, obstacles and commitment (sum-variables of mean and standard deviation Likert 1-5 scores: 29.59±7.46, 25.09±3.31, 25.86±5.92, 20.56±5.04) and 21.74±2.71, respectively). There were significant relationships between overall average scores and both work environment (highest for workers in healthcare centers) and previous mentoring training.	
Hall-Lord et al. 2013, Sweden	To evaluate extent that goals of a clinical supervision model were met after 18 months utilization in university and clinical placement	Main preceptors (n=12), personal preceptors (=193) in somatic care and wards, head nurses (n=30), and clinical nurse lecturers (n=11) (n=246)	Descriptive, cross-sectional design: paper survey, with a structured questionnaire Instrument developed for the study covering background data (7 items), quality criteria related to learning and supervision (14 items), factors contributing to assessment and fulfilment of students' goals (7 items), collaboration and support (6 items). Likert scales 1-4, 1-6, 1-3. Descriptive statistics (frequencies, percentages, means, and standard deviations)	Personal preceptors assigned the lowest scores for students' opportunities for active learning, learning in reference placements and combination of theory and practice (mean and standard deviation Likert 1-6 scores: 4.5±0.9, 4.6±0.9 and 4.6±0.7, respectively). They reportedly supervised students' learning, through reflection, more than the main preceptors (mean and standard deviation scores: 3.6±0.7 and 2.7±0.8, respectively). Personal preceptors used evidence-based research less often in their work than the main preceptors (mean and standard deviation scores: 3.0±1.2 and 4.1±0.8, respectively). Personal preceptors rated their contribution to students' fulfilment of goals higher than main preceptors (mean and standard deviation scores: 4.5±0.6 and 4.0±1.0, respectively) and clinical lecturers. The collaboration between and support from clinical lecturers, main preceptors and personal	4

Heffernan et al. 2009, Ireland	To report findings from comprehensive evaluation of a teaching, assessing and preceptorship program offered in the South West of Ireland through a structured comparison of responses from the general nursing and mental health nursing preceptors and students	Mental health and general health preceptors (n=191) and students (n=208)	Descriptive, cross-sectional design: structured questionnaire Instrument (74 items) developed for the study based on interviews. Sub-dimensions included importance of preceptor characteristics, demonstration of general preceptor characteristics, specific knowledge demonstrated by preceptors and specific skills demonstrated by preceptors. Likert scale 0-4.	preceptors was perceived as good or fairly good. Preceptors rated communication skills as most important, closely followed by approachability and being supportive of students (mean Likert 0-4 scores: 3.93, 3.90 and 3.84, respectively). They rated understanding of the undergraduate program as the least important characteristic. They also rated understanding of the student's role and importance of orientation to the clinical area as the most important knowledge (mean scores: 3.52 and 3.54, respectively), but understanding of the concept of reflection and role of the link with a lecturer the least important knowledge (mean scores: 3.01 and 2.94, respectively). Preceptors ranked their communication skills least highly (mean score: 2.51).	3
Helminen et al. 2017, Finland	To describe the final assessment of the clinical practice of nursing students and examine possible differences in assessments by the students and their teachers and mentors in five universities of applied sciences in Finland	Nursing students (n=232), their teachers (n=79) at five universities of applied sciences in Finland and mentors (n=178) from five partner hospitals	Descriptive, cross-sectional design, using a questionnaire developed for the study, including 73 items (for mentors) measuring honest and direct criteria-based final assessment, taking account of multi-professional views and teachers' presence in the final assessment situation Likert scale 0-3. Descriptive statistics, plus analysis of variance with Tukey-Kramer multiple comparisons (SPSS), $p < 0.05$	Mentors believed more strongly than nursing students that the students' final assessments were honest and criteria-based (mean and standard deviation Likert 0-3 scores: 2.50 ± 0.34 and 2.01 ± 0.41 , respectively), took account of multi-professional views (1.83 ± 0.79 and 1.45 ± 0.70 , respectively) and were carried out in the presence of nursing teachers (2.85 ± 0.29 and 2.73 ± 0.36 , respectively).	6

Hyrkäs & Shoemaker 2007, Canada	To explore relationships between preceptors' perceptions of benefits, rewards, support, and commitment to the preceptor role with a group of graduating nursing students and newly hired nursing staff	Two sub-groups of preceptors (n=82): (A) mentoring undergraduate students and (B) working with newly hired nurses	<p>Descriptive, correlational study design</p> <p>A four-part questionnaire: Preceptor's Perceptions of Benefits and Rewards (PPBR) Scale with 14 (Likert-scale 1-6) items, Preceptor's Perceptions of Support (PPS) Scale with 17 items and Likert- scale 1-6, Commitment to the Preceptor Role (CPR) Scale with 10 items and Likert 1-6, demographic sheet with additional questions.</p> <p>Descriptive and inferential statistics, Pearson correlation coefficients, Spearman Rank Correlation, non-parametric chi-square, Kruskal-Wallis and Mann-Whitney tests, $p < 0.05$ (2-tailed) (SPSS)</p>	<p>Getting benefits and rewards increased the preceptors' commitment ($r=0.52$, $p < 0.001$, $n=70$). There were significant positive correlations between perceptions of support and commitment ($r=0.42$, $p=0.01$). Among group B preceptors' nursing experience correlated ($r=0.62$, $p=0.02$) with support and some associations were found between support, preceptors' ages ($r=0.68$, $p < 0.01$) and graduation year ($r=-0.62$, $p=0.02$). The preceptors had higher perceptions of the benefits and rewards than reported earlier. Significant differences were found between graduation year, working place and type of nursing work. Preceptors from group B felt support was better than those from group A. Commitment was very high</p>
Karjalainen et al. 2015, Finland	To describe how mentors assess their competence (supporting students' learning, providing goal-oriented assessment of students' performance, having counselling conversations and giving feedback, and evaluating students' performance) and associated factors.	All hospital workers (n=3865) from one Finnish hospital district	<p>Descriptive, cross-sectional design: email questionnaire</p> <p>Mentors' Competence Instrument (MCI): seven sub-dimensions: supporting student's learning, mentoring practices and resources, feedback and evaluation, goal-oriented mentoring, reflection in mentoring, motivation and mentors' characteristics and roles. This analysis included the data on students' learning, goal-oriented assessment of students' performance, counselling conversations, giving feedback and evaluating students' performance (in total 87 items)</p>	<p>Counselling conversations of most (60%) of the mentors lasted 20-59 minutes. Over half of preceptors (54%) assessed supporting students learning good but 59% of all assessed community formation and application and knowledge of own learning conception (58%) fair. Goal-oriented assessment of students' performance (48%) and counselling conversations was rated fair: 65% of mentors thought their skills in two-way conversation were good, 58% and 61%, respectively thought their analytical and goal-oriented conversations were fair. More than half rated their giving feedback as fair (56%), and evaluation of students' performance good (56%). Time for mentoring and counselling conversation</p>

			Likert-scale 1-4		affected mentors' competence. Mentors who had participated in some education and had enough time for mentoring and counselling conversation rated their skills most highly.
			Descriptive statistics, frequencies, percentages, Spearman correlation ($r \leq 0.30$) Bartlett's test and Kaiser-Meyer-Olkin test ($p < 0.001$), Varimax-rotation, Kolmogorov-Smirnov test, Cross-tabulation, one-way ANOVA, Kruskal-Wallis test (SPSS), Bonferroni and Dunnet test, $p < 0.05$ and $p < 0.001$		
Kälkäjä et al. 2016, Finland	To describe student counselling practices, resources, characteristics and motivation as evaluated by student mentors	Medical staff (n=3865) from one Finnish hospital district	Descriptive, cross-sectional design: email questionnaire, Mentors' Competence Instrument (MCI), seven sub-dimensions: supporting student's learning, mentoring practices and resources, feedback and evaluation, goal-oriented mentoring, reflection in mentoring, motivation and mentors' characteristics and roles. This analysis included data on mentoring practices and resources (24 items), mentors' characteristics (42 items) and motivation (21 items)	52.8, 58.6 and 57.7% of mentors respectively rated their mentoring practices, resources and practices with students and teachers as fair. 71.8% rated their personal characteristics as good, and 62.7% also rated their knowledge about roles and responsibilities as good. Motivation was evaluated fair or good by 53.5 and 43.9%, respectively. Mentoring role, additional education and time spent counselling were all significantly correlated with scores for student counselling practices, resources, characteristics and motivation. Low work experience was significantly negatively correlated with scores for mentors' counselling practices, dealing with students and teachers, knowledge of the mentor's roles and tasks, ability to motivate students and counselling resources.	6
			Likert-scale 1-4, changed to 1-3 in analysis		
			Descriptive statistics, multivariate analysis: frequencies, percentages, Spearman correlations ($r \leq 0.30$), Bartlett's and Kaiser-Meyer-Olkin tests ($p < 0.001$), Varimax-rotation, Kolmogorov-Smirnov test, medians, Cross-tabulation, Chi-square, Kruskal-Wallis test		

McInnes et al. 2015, Australia	To describe experiences of clinical placements in primary care from the perspectives of pre-registration nursing students and nurse mentors	Pre-registration nursing students (n= 45) from a single Australian tertiary institution and primary care (RN) mentors (n=22)	(SPSS) , p<0.05 Descriptive, cross-sectional design; two separate online surveys. One (CLEI19 and QCPI) collected data from pre-registration nursing students who had completed a placement in primary care and the other from registered nurses who had supported these placements. The Registered Nurse survey was developed for this study and comprised 20-items. 13 explored the nurses' demographics and the setting in which they worked. The other items focused on their experience in supervising pre-registration nursing students within their practice	Almost all (95%) respondents felt that having pre-registration nursing student placements within their workplace was a good idea. Commonly cited barriers were lack of time (31.8%) and space limitations (27.3%). Most respondents indicated that their own personal desire to mentor nursing students was a key enabler of such placements (77.3%). Also highly valued were enthusiasm of the general practitioners (68.2%), patient perceptions (63.6%) and motivated students (63.6%). Most participating nurse mentors (94%) were somewhat or extremely satisfied with mentoring pre-registration nursing student placements in their setting. Major sources of dissatisfaction were lack of funding (45.5%).	6
Meden et al. 2017, Slovenia	To determine views and opinions of clinical mentors and undergraduate nursing students on the assessment of clinical practice.	Clinical mentors (n = 37) and undergraduate nursing students (in 3rd year of study) (n = 84)	Quantitative descriptive methods, printed version of the survey for clinical mentors and online survey for undergraduate nursing students sent by email (45 items with 1-5 Likert-scale). Descriptive statistics, Chi-square test, Mann-Whitney U test, Pearson correlation coefficient (SPSS 22.0)	According to mentors, assessment should be structured in advance (U = 790, p < 0.001). 91.7% agreed that the criteria should be precisely defined, and 88.9% that assessments of students' knowledge should be carried out on the spot and finally. More than half of the students (55.3 %), and mentors (68.6 %) were not satisfied with assessments of the clinical training (p=0.063). They were aware of the weakness of the assessment tool. Mentors also complained about the lack of time for mentoring.	5
Morrison et al.	To elicit factors that caused satisfaction and dissatisfaction for	RNs (n=391) from six acute care	Descriptive, cross-sectional design	Mentors agreed that working with students gave them new opportunities for mentoring and allowed	5

2016, United States	RNs who participated in two types of nurse-student interactions - clinical rotation role-model and student preceptorship.	hospitals in two multihospital not-for-profit community healthcare systems in Southeastern United States	Nursing Students' Contributions to Clinical Agencies (NSCCA) survey adapted to online survey format using SurveyMonkey, sent by email, 54 items. Likert scale 0-4, a global item with -5-(+5). Descriptive statistics, (SPSS)	nurses to participate in the students' professional development, they also agreed that student participation increased nurses' sense of professionalism and working with students provides reciprocal learning (mean and standard deviation Likert 1-4 scores: 3.05±0.84, 2.84±0.76, 2.7±0.84 and 2.70±0.95, respectively). Nurses who were student preceptors and nurses with less than 10 years of experience had the most positive perceptions. Nurses in the peri-natal setting had the least positive perceptions of students' contributions
Oikarainen et al. 2017, Finland	To describe mentors' competence in mentoring culturally and linguistically diverse (CALD) nursing students during clinical placement and identify factors that affect mentoring.	Mentors who had experience in mentoring CALD students in five university hospitals in Finland (n=323)	A cross-sectional, descriptive explorative study design; email-based surveys. The self-assessment Mentors' Competence Instrument (MCI) and Cultural and Linguistic Diversity in Mentoring scale (CALD+Ms), developed for this study. MCI comprised 55 items covering: mentor characteristics, identifying students' level of competence, mentors' motivation, motivating students, supporting students' learning processes, goal orientation in mentoring, reflection during mentoring, student-centered feedback and evaluation, constructive feedback and evaluation. CALD+Ms included 8 items on cultural diversity in mentoring and 6 on linguistic diversity in mentoring.	Mentors with experience in mentoring CALD nursing students evaluated their mentoring competence highly. The sum variable <i>reflection during mentoring</i> was ranked most highly, and student-centered feedback and evaluation lowest (mean and standard deviation Likert 1-4 scores: 3.72±0.37 and 3.18±0.56, respectively). Mentors who reported basic proficiency in the English language and had experience of living or working abroad reported higher competence in linguistic diversity in mentoring. Linguistic diversity related to mentors' frequency of mentoring exchange students, considering students' cultural backgrounds, spending time discussing cultural differences with students and ensuring that CALD and native students worked together. Mentors with a higher rating of competence in linguistic diversity needed less support from colleagues in

Omer et al. 2016, Saudi Arabia	To describe expectations of “nurse preceptors' roles and responsibilities” held by nurse preceptors and their preceptees, and to identify areas of consensus and disagreement in relation to importance of such roles and responsibilities and how frequently preceptors attend to their roles and responsibilities	Nursing students (n=87) at various levels of their nursing education, and RNs (n=62) who acted as preceptors to train nursing students in hospital	<p>Likert-scale 1-4.</p> <p>Stratified sampling technique: participants were chosen randomly.</p> <p>Descriptive statistics, Spearman’s rank order correlation (P) and non-parametric tests and binary logistic regression analysis, $p < 0.05$.</p> <p>Descriptive, comparative design; convenience sampling.</p> <p>Two-part questionnaire developed by Boyer (2008), covering four important roles and 43 responsibilities: Protector (including 9 responsibilities for protecting both patients and preceptees from adverse outcomes), Evaluator (including 7 responsibilities for gathering evidence of safe and effective practices), Educator (including 10 responsibilities for providing instructions and support), and Facilitator (including 17 responsibilities for acting as role model, socializer and team leader).</p> <p>Two Likert 1-4 scales for every responsibility-item: an importance scale and frequency of attendance scale.</p> <p>Descriptive statistics, inferential statistical methods (Paired sample T-test and T-test)</p>	mentoring CALD students.	4
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Ruuskanen et al. 2018, Finland	To evaluate the impact of educational intervention on mentors' competence in mentoring students at the university hospital in Finland	Nursing staff (N=146) in one hospital district in Finland from three separate educational interventions	(SPSS), $p < 0.05$. Quasi-experimental design; electronic survey 10 days before and 10 days after a 4-month educational intervention (three learning days and independent learning, with same educators and content). Mentors' Competence Instrument (MCI), seven sub-dimensions: supporting students' learning (23 items), mentoring practices and resources (13 items), feedback and evaluation (18 items), goal-oriented mentoring (11 items), reflection in mentoring (18 items), motivation (15 items) and mentors' characteristics and roles (24 items). Likert-scale 1-4. Descriptive statistics, Wilcoxon's signed rank test, $p < 0.01$	After the intervention the participants assessed their competence in student motivation, reflection and goal-oriented mentoring as good (mean Likert 1-4 scores: 3.62 or 3.63). They assessed their competence somewhat lower after the intervention in supporting students' learning, giving feedback and evaluation, as well as mentoring practices and resources (mean scores: 3.31, 3.48 and 3.39, respectively). Educational intervention was significantly correlated with mentors' self-evaluated student mentoring competence in all seven dimensions. The student mentoring training intervention raised student counselling competence and increased the student-orientation of the mentoring.	7
Smith et al. 2011, United States	To explore how student RN anesthetists and clinical preceptors perceived 22 effective clinical teaching characteristics. The study examined the individual importance of each characteristic as perceived by students and preceptors and the level of congruence between the two groups	First- or second-year student RN anesthetists (n=31) and certified RN anesthetists (n=64) who worked at the Midwestern hospital and participated in	Descriptive, cross-sectional design; paper survey. A questionnaire covering 24 characteristics: 22 previously identified (Katz 1984), and two added for the study (participation in a preceptor educational course and mentoring style). Likert scale 1-5. Descriptive statistics, Friedman 2-way	ANOVA revealed high within-group consistency (Friedman test: 289.21; at $p < 0.001$). Katz's characteristics were perceived to be important by both clinical instructors and students. Most respondents rated each of these items as important, very important, or highly important. Nurse instructors ranked clinical judgment and competence most important, followed by ego strength/self-assurance, calmness under stress, encouraging independence and stimulating student involvement (mean Likert 1-5 scores: 4.31, 4.17, 4.13, 4.06 and 4.05, respectively).	6

		clinical teaching	analysis, Kendall coefficient (SPSS)	Least highly rated characteristics were participation in a preceptor educational course, sensitivity, use of a student care plan and scholarly teaching/knowledge (mean scores: 2.95, 3.08, 3.20 and 3.33, respectively).	
Tuomikoski et al. 2018, Finland	To evaluate the mentoring competence of Finnish nurse mentors through self-evaluation and identify distinct mentor profiles	Mentors (n=576) from all five university hospitals in Finland, located in the five biggest cities in the country	<p>Descriptive, cross-sectional design; online survey.</p> <p>Mentors Competence Instrument (MCI) with 63 items covering 10 mentoring competence categories: student-centered evaluation (10 items), goal-oriented mentoring (9 items), mentoring practices in the workplace (6 items), reflection during mentoring (6 items), mentor characteristics (7 items), supporting students' learning processes (8 items), mentor motivation (5 items); identifying students' needs for mentoring (4 items), constructive feedback (4 items), and student-mentor mentoring practices (4 items). Random sampling.</p> <p>Likert scale 1-4.</p> <p>Descriptive statistics, K-mean cluster algorithm, Skewness, kurtosis and Kolmogorov-Smirnov-tests, crosstabs, Chi-square and Kruskal-Wallis tests. $p < 0.05$ with Bonferroni correction</p>	Participating mentors were classified into mentor profiles according to their overall mentoring competences, divided into low, medium and high classes (mean Likert 1-4 scores: < 2.49 , 2.5-3.49 and > 3.5 , respectively). Mentors evaluated their competence in various categories as medium to high. Over 50% rated their competence as high in seven categories: reflection during mentoring, identifying students' needs for mentoring, mentor-student mentoring practices, mentor characteristics, constructive feedback; supporting students' learning processes and goal-oriented mentoring. Most mentors (64%) rated their competence in student-centered evaluation as medium, while 10% reported low competence in this. Competence in student-centered evaluation was ranked lowest of all competence categories.	6

Table 4. Aspects of registered nurses' self-assessed competence in mentoring nursing students

Mentors' competence											
	Cervera-Gasch et al. (2018)	Helminen et al., (2017)	Karjalainen et al., (2015)	Kälkälä et al., (2016)	McInnes et al., (2015)	Meden et al. (2017)	Oikarainen et al., (2017)	Morrison & Brennaman (2016)	Ruuskanen et al., (2018)	Tuomikoski et al., (2018)	
	n=117	n=225	n=622	n=622	n=22	n=84	n=323	n=391	n=146	n=576	
Mentoring practices in the workplace and resources				median 3.10				8.06 (2.33)	3.14 (0.45)	3.39 (0.36)	3.3 (0.55)
Mentoring practices in mentor-student and mentor-university interactions				median 3.14	32%						3.5 (0.50)
Identifying student's needs for mentoring							3.68 (0.44)				3.7 (0.46)
Goal-orientation in mentoring			median 3.38				3.45 (0.51)		3.34 (0.47)	3.53 (0.44)	3.4 (0.49)
Supporting students' learning processes			median 3.57				3.51 (0.37)		3.05 (0.47)	3.31 (0.42)	3.2 (0.39)
Motivating students				median 3.43		86%	3.49 (0.46)				
Student-centered feedback and evaluation		2.50 (0.34)	median 3.13				3.18 (0.56)		3.23 (0.45)	3.48 (0.40)	3.1 (0.52)
Reflection during mentoring						58%	3.72 (0.37)		3.43 (0.38)	3.62 (0.33)	3.7 (0.38)
Provision of feedback			median 3.35				3.48 (0.42)				3.5 (0.44)
Mentor characteristics				median 3.82			3.57 (0.40)		3.54(0.32)	3.69 (0.29)	3.6 (0.39)
Mentor motivation, personal desire to have nursing students	25.09 (3.31)			median 3.50	77%	75%	3.42 (0.54)		3.47(0.38)	3.62 (0.35)	3.4 (0.54)
Involvement	29.59 (7.46)										
Satisfaction	25.86 (5.92)										

Attitudes to obstacles	20.56 (5.04)									
Commitment	21.74 (2.71)									
Instrument, items, scale used	IMSOC 33-items Likert 1-5	Questionnaire 73-items Likert 0-3	Mentors Competence Instrument 87-items Likert 1-4	Mentors' Competence Instrument 63-items Likert 1-4	The Registered Nurse survey 20-items	Mentors' survey 43-items, Likert 1-5	Mentors Competence Instrument 55 items Likert 1-4	NSCCA survey and global item about student's contribution Likert -5-(+5)	Mentors' Competence Instrument 122 items Likert 1-4	Mentors Competence Instrument 63 items Likert 1-4

Search keywords group 1: mentorship or mentor* or supervis* or facilitat* or precept* or coach* or instructor* or teach* or tutor* or educator* or coach* or train* AND students, nursing or nurs* student*

Search keywords group 2: competence* or skill* or knowledge or attitude* or perform* or value* or quality*

Search keywords group 3: learning environment clinical or education clinical or student placement or clinical practice or clinical placement* or clinical rotation or clinical training or clinical learning or clinical teaching or clinical learning environment or clinical education

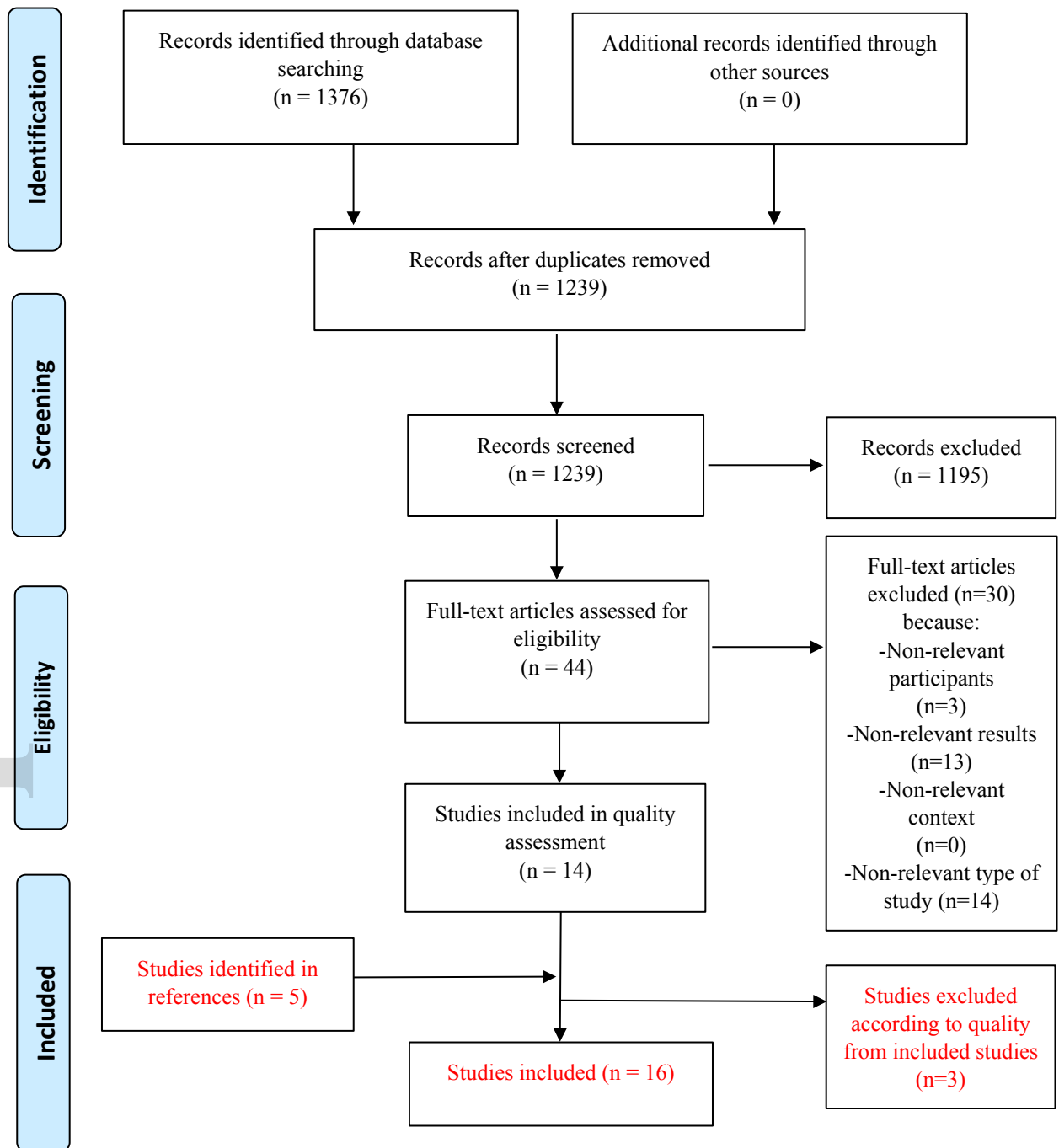


Figure 1. PRISMA flow diagram of the study selection process

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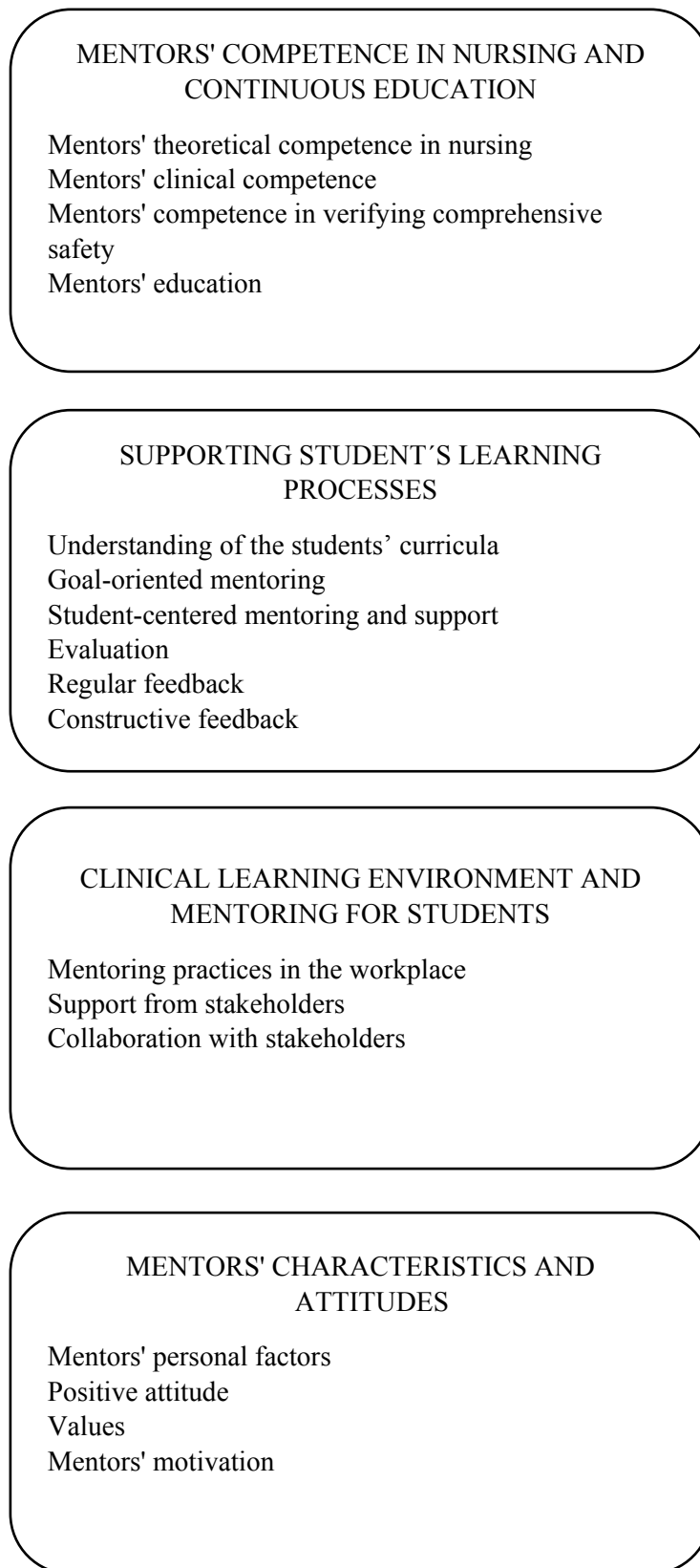


Figure 2. Themes identified from thematic analysis of the descriptive data.