REVIEWS

Factors influencing nursing competence of registered nurses in the European Union: A scoping review

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ABSTRACT

Background and objective: In the countries of the European Union, more than three million registered nurses take responsibility for health care in various acute- and long-term settings. The development of nursing competence and its continuous evaluation are part of the European strategy to ensure high-quality health care. Transnational standards in the education of nurses intend to ensure the advancement of competent nurses. However, competence is a multifactorial construct that does not solely rely on formal qualifications. Experience, contextual conditions, knowledge and skills as well as values, norms and rules are defined as critical components of competence. Thus, the aim of this scoping review was to identify factors that influence the nursing competence of RNs in countries of the European Union.

Methods: A scoping review following the guidelines of Joanna Briggs Institute was conducted. Quantitative studies assessing nursing competence by psychometrically tested instruments and exploring respective influence factors were searched in electronically databases (Cochrane Library, CINAHL, Medline, DOAJ, ERIC, Academic Search Elite, PsycInfo, PsycArticles, CareLit). Extracted study results were deductively structured with reference to theoretically reasonable factors of competence.

Results: A total of sixteen studies were included in this scoping review. Most studies were conducted in Northern European countries. Experience (operationalized as age and years of working as a registered nurse), professional nursing context, type of nursing education, non-formal acquisition of nursing-specific knowledge as well as experiencing workplace autonomy, high quality of care and empowerment all influence the competence of registered nurses.

Conclusions: For most European countries, there are neither scientific data on nursing competence nor on its influencing factors available. Our findings emphasize the importance of considering factors that influence nursing competence in the course of systemic policy-making on nursing development as well as on organizational nursing governance. We strongly suggest the conduct of longitudinal studies in further countries of the European Union to gain further insights on nursing competence and to explore the impact of its influencing factors.

Key Words: Assessment, European union, Nurses, Professional competence, Scoping review

1. BACKGROUND

Nurses represent the largest professional group of stakeholders involved in healthcare globally,[1] their efficiency in providing care is critical to achieving global and national health goals.[2] There are about 6.9 million caregivers employed in the European Union (EU), whereas a total of more than three million professional nurses in European countries take responsibility for patient care in different acute and long-term settings.[3]

Competent and highly qualified nurses reduce the risk of

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patient mortality[4] and increase patient safety as well as quality of care.[5] They significantly improve patient outcomes,[6] and are responsible for transformative changes toward patient-centered care as part of the interprofessional team.[7] In addition, highly competent nurses can reduce overall health care costs.[8]

Nursing competencies generally enable the definition, distinction, and specification of tasks and accountabilities within different nursing professional groups.[9] Whereas the International Council of Nurses' (ICN) framework provides a globally accepted central reference point for the definition and practical operationalization of nursing competencies,[10] the World Health Organization (WHO) formulated global standards regarding the competencies to be acquired by generalist nurses. These standards cover competencies in a total of eight defined profession-related domains.[11] In order to achieve global WHO standards, minimum requirements were defined for the member states of the European Union (EU) with regard to educational duration, theoretical learning contents and practical training requirements.[12] The aim of this pan-European agreement was to ensure that the qualifications of registered nurses (RN) in all member states are of the same high standard and have the equivalent level of training requirements and subsequently RNs have roughly equivalent levels of competence across European countries. In particular, this is intended to enhance the transnational mobility of nurses, both in the context of nursing training and subsequently of cross-border work permits in European countries.[13]

Nevertheless, competence is neither synonymous with nor limited to formal qualification.[14] From a theoretical point of view, competence evolves through the interaction of knowledge and skills, qualifications[15] as well as values, norms and rules.[16] These factors influence the prevalence and further development of respective competence just as much as individual experience[17] and the possibility of effectively applying the corresponding competencies through performance in task-specific contexts.[14] While definitions and concepts of nursing competence may differ,[18–20] nursing competence is likewise outlined as the ability of nurses to act on the basis of knowledge, skills, attitudes, and values[21,22] and implies the holistic potential for action that unfolds by incorporating personal dispositions when interacting in complex situations in a profession-specific context, referring to existing skills and abilities in performance.[23] However, its development is both characterized as the transition from rule-governed to active-ethical action[23] and as a stepwise gradually process.[24] Thus, it is apparent that the assessment of nursing competence and its development needs to be conducted primarily within the scope of these respective factors.[25]

The evaluation of competence can be methodologically differentiated. Besides more insightful qualitative evaluations of nurses' competencies, the standardized assessment of nursing competence measured by psychometrically tested instruments is increasingly gaining significance.[19,26] Gathering valid and reliable data on prevalent extents of nursing competence is an important starting point for the continuous fostering and refinement of professional competence throughout nurses' careers[27] on individual and organizational[28] level and, particularly, with regard to health policy decision-making, on systemic levels.[29,30] The use of standardized large-scale assessment instruments has become established in Europe since the beginning of the 2000s.[31] In a previous systematic literature research, valid and reliable holistic instruments for competence assessment of RNs in member states of the EU were identified.[32] These instruments cover competencies related to direct clinical practice, communication and cooperation, nursing development, scientific knowledge, teaching and coaching, health promotion and ethical action but differ in terms of item- and dimension-specific content and terminology. The earliest of these instruments is the Nurse Competence Scale (NCS), which comprises the seven scale dimensions Helping role, Teaching-coaching, Diagnostic functions, Managing situations, Therapeutic interventions, Ensuring quality, and Work role. The level of nursing competence is self-assessed by a 4-point Likert scale, and the ratings are interpreted at item and dimension level as well as for the overall scale. In addition to the extent of nursing competence, the frequency of use of the respective item-specific competency is measured on a visual analogue scale.[33] The EHTAN Questionnaire Tool covers the dimensions Assessment, Care delivery, Communication, Health promotion and illness prevention, Personal and professional development, Professional and ethical practice, Research and development, and Teamworking. The items are self-assessed using a 4-point Likert scale and can be interpreted item-specifically or dimensionally as well as at total scale score.[34] Furthermore, the original version of the Nurse Professional Competence Scale (NPC) consists of the scale dimensions Nursing care, Value-based nursing care, Medical-technical care, Teaching/learning and support, Documentation and information technology, Legislation in nursing and safety planning, Leadership in and development of nursing, Education and supervision of stuff/students in development activities for improved care, the respective competence extents (4-point-Likert scaling) are interpretable on both item-and dimension levels.[35] The short version of this instrument (Nurse Professional Competence Scale Short Form; NPC-SF) comprises the dimensions nursing care, value-based nursing care, medical-technical treatment nursing care, nursing-related pedagogy,

documentation and nursing-related administration, nursing development, leadership and organization of nursing care, competencies are self-assessed by a 7-point-Likert scaling and interpreted on item-and dimension level.[36] Eventually, the Professional Nurse Self-Assessment Scale (ProffNurseSAS) assesses nursing competencies across six dimensions (Direct clinical practice, Professional development, Ethical decision-making, Clinical leadership, Cooperation and consultation, Critical thinking). The self-assessment at item level is carried out by using a numerical rating scale, and the interpretation is provided optionally for the total scale as well as dimension- and item-related.[37]

An exploratory literature search of the Cochrane Library and the Joanna Briggs Institute (JBI) Evidence Synthesis databases showed that no systematic review with a specific focus on nursing competence of RNs working within the nursing conditions and requirements defined for member countries of the EU and relevant factors influencing its prevalence and development is available. Likewise, no scoping review with this thematic focus was found. According to the mentioned theoretical concept of competence, different factors critically affect its extent and facilitate or restrain purposeful competence development. For this reason, the aim of this scoping review is to identify factors that influence the nursing competence of RNs in countries of the EU.

1.1 Research question

The following research question was formulated in accordance with the objective of the scoping review:
"Which factors influence the extent and the development of nursing competence among registered nurses in countries of the European Union?"

1.2 Inclusion criteria

The components of the rationale and the research question of the scoping review were congruent with the PCC mnemonic (Participants, Concept, Context) recommended for scoping reviews. The detailed explanation of the particular PCC components guided the decision of the researchers in case of unclear estimation regarding inclusion or exclusion of identified sources.[38]

1.3 Participants

We defined that the study population must consist explicitly of registered nurses or generalist nurses. Since the professional denomination of nurses of this qualification level varies across Europe,[39] the terms registered nurse and generalist nurse were considered synonymously. The basic qualification must have been acquired either under the defined requirements of a three-year vocational program or a university program.[40] We included respective participants regardless of age and gender.

1.4 Concept

The phenomenon of interest was standardized assessed nursing competence and its influencing factors. Five valid and reliable large-scale assessment instruments for nursing competence of RNs are available in Europe in their respective original versions as well as in translated and psychometrically tested versions.[32] Nursing competence had therefore been assessed by one of the following instruments: Nurse Competence Scale;[41] Nurse Professional Competence Scale or Nurse Professional competence scale Short form;[35,36] EHTAN Questionnaire Tool;[34] Professional Nurse Self-Assessment Scale.[37]

As competence is a combination of abilities, knowledge, skills, attitudes,[15] values, rules, norms and qualifications[16] and factors for competence development refer to the technical and profession-specific context[23] and task-specific experience,[17,42] studies consequently had to relate at least one of these factors in an operationalized way to the dependent variable nursing competence.

1.5 Context

The review included studies that assessed nursing competence of RNs in all care sectors and disciplines across countries of the European Union.

1.6 Types of evidence sources

This review included solely original research articles of interventional and observational study designs relating at least one theoretically reasonable influence factor to nursing competence.

2. METHODS

The scoping review follows the Joanna Briggs Institute methodology for scoping reviews.[43] This type of review is appropriate to comprehensively outline the focused topic-specific current research knowledge, to summarize and map the existing scientific evidence, and to identify possible research gaps.[38]

2.1 Search strategy

In accordance with the guidelines of the JBI methodology, the literature search was performed in a three-step iterative process.

In a first step, the Medline and CINAHL databases were searched for relevant topic-specific publications. For this purpose, potentially appropriate search terms were extracted from the "Concept" – component of the PCC mnemonic.

According to our inclusion criteria, nursing competence as the phenomenon of central interest must be assessed with one of the predefined assessment instruments. The Nurse Competence Scale is the historically earliest of all nursing competence assessment instruments in Europe. The first publication on testing this instrument's psychometric properties was released in 2004, so the search was limited to articles from that year onwards. Additionally, the database-specific limitations "All Fields" (Medline via PubMed) and "TX All text" (CINAHL complete via EBSCO-Host) were chosen. The two objectives of this first database research were a) the extraction of further relevant search terms for developing the final search strings and b) obtaining a preliminary overview of the available number of studies as well as information on the study designs used. We used the literature management program Citavi version 6.10[44] to create a cloud-based data matrix. Two researchers conducted the initial database research independently and transferred all potentially eligible studies into the literature management program. The keywords of the publications were then exported from the literature management program into a spreadsheet. In parallel, all identified publications were consecutively imported from the Medline database into the Yale MeSH Analyzer[45] along their PMIDs. The spreadsheet was expanded by adding the results of this analysis procedure. For structuring the content, categories were created based on the PCC mnemonic to assign the individual keywords and their synonyms.

All identified search terms were exhaustively tested in the databases Medline and CINAHL complete in different combinations. The initially high number of component-related search terms was reduced by iteratively comparing the number of relevant records identified by the respective search string combinations and the subsequent removal of inadequate terms. Thus, a specific search string could be constructed with a corresponding low risk of missing relevant studies. Concurrently, we assessed whether changing the limits within the databases would influence the search results. We observed that replacing the limits "All Fields" (Medline via PubMed) or "TX All text" (CINAHL complete via EBSCO-Host) with the filters "Title/Abstract" (Medline via PubMed) or "[TI OR AB]" (CINAHL complete via EBSCO-Host) did not reduce the number of relevant retrievals, while the number of irrelevant retrievals decreased significantly. Consequently, we decided to apply this limit for the subsequent systematic database search. All analysis steps for testing the different search string combinations were carried out using Citavi version 6.10[44] and Microsoft Excel version 1808.[46]

The systematic literature search was conducted in the period 12/2020 to 03/2021 in the databases Medline via PubMed, Cochrane Library, Diractory of Open Access Journals, CINAHL via Ebsco-Host, ERIC via Ebsco-Host, Academic Search Elite via Ebsco-Host, PsycInfo via Ebsco-Host, PsycArticles via Ebsco-Host and CareLit as well as in the publisher databases ScienceDirect (Elsevier Publishing) and Hogrefe Publishing. The following search terms, keywords and phrases were used for the search and logically combined along with the Boolean operators AND/OR: associat*; relat*; factor*; influenc*; EHTAN; EHTAN nurse competence self-assessment tool; EHTAN Questionnaire; EQT; EQT Questionnaire; Professional Nurse Self-Assessment Scale; ProffNurseSAS; Nurse Competence Scale; NCS; Nurse Professional Competence Scale; NPC.

The database search was conducted independently by two researchers and all iterations were documented in database-specific search protocols. The relevant retrievals were imported into the cloud-based literature management programme[44] along from the DOIs. The reference lists of these publications were subsequently screened by two researchers to identify further eligible articles. However, this step did not lead to the identification of any additional relevant publications.

2.2 Source of evidence screening and selection

In a first selection step, the abstracts of potentially relevant publications were transferred into an Excel spreadsheet and screened by two researchers independently for consistency with the defined inclusion criteria. To ensure reasonable and criterion-guided assessment, seven reasons for exclusion of records were formulated and defined as codings (Cx): C1) study was not conducted in an EU country; C2) nursing competence was not assessed with a defined assessment tool; C3) study had neither an interventional nor an observational design; C4) primary objective of the study was not the assessment of nursing competence; C5) no factors influencing nursing competence were evaluated; C6) study sample was not post-graduate RNs; C7) publication language is neither German nor English.

Following the completion of the coding process, the assessments of both researchers were compared, and in case of disagreement, a third researcher was involved in reaching consensus.

After abstract screening, the remaining studies were independently read in full text by two researchers in a further selection step. Consistent with the previously mentioned reasons for exclusion, unmet inclusion criteria were recoded and annotated with explanations. Following this second selection step, uncertainties were subsequently discussed, and consensus was sought with the involvement of a third researcher.

The publications screened and coded in these two selection steps are presented in Appendix 1.

2.3 Data extraction

Data extraction was performed by transferring the relevant study content into a standardized extraction table. The study characteristics and results were organized in this tabular data matrix using the Participants, Concept, and Context components of the PCC mnemonic, as well as the Types of Evidence Sources. In addition to bibliographic information on authors and publication years, study characteristics regarding country of origin, study objectives, study designs, samples, settings and deployed assessment instruments were extracted from all studies. The study results relating to theoretically reasonable factors influencing nursing competence were transferred to the results sections of the table. All extracted results were finally categorized in terms of an inductive analysis.[47]

Two researchers reviewed the extracted matrix data for consistency with the data from the original studies in a reciprocal peer-review process. Deductive content analysis was conducted independently by those two researchers, and the categorizations were checked for consistency to provide interpretive argumentation confirmation.[47] Inconsistencies requiring further clarification were discussed by the research team to reach a final consensus.

3. Results

3.1 Search results

We initially identified a total of 412 publications from database search. After removing multiple references (n = 322), the abstracts of the remaining 90 publications were screened for consistency with the inclusion criteria. A total of 59 publications were subsequently eliminated due to inadequate eligibility requirements. Reasons for the exclusion were that the study was not conducted in a European country (n = 15), nursing competence was not assessed with a defined assessment tool (n = 8), no cross-sectional or longitudinal design was used (n = 8), the primary objective of the study was not the assessment of nursing competence (n = 4), no factors influencing nursing competence were evaluated (n = 8), the study sample was not exclusively post-graduate RNs (n = 15) or the publication language was neither German nor English (n = 1). The remaining 31 publications were read in full text and likewise assessed for eligibility. Following this step, a further 15 publications had to be excluded due to infringements of inclusion criteria (inappropriateness regarding to country of study conduct, n = 5; study design, n = 1; study objective, n = 5; influence factors, n = 1; sample characteristics, n = 3). Finally, a total of 16 eligible studies were included in the scoping review. Figure 1 illustrates the search process as a PRISMA flowchart adapted for scoping reviews.[43]

3.2 Characteristics of included sources

The 16 included studies were conducted between 2004 and 2020 in six different European countries, with a more than four-fifths (n = 13; 81.3%) of all studies being allocated to the Northern European region (see Table 1). A total of 14 (87.5%)[33,48–60] studies explored nursing competence and its influencing factors using cross-sectional designs, while two studies (11.8%) conducted cohort studies to evaluate the development of nursing competence.[61,62] The sample sizes varied between 45 RNs[62] and 2083 RNs[58] in the respective studies. Overall, the 16 studies used three different instruments to assess nursing competence, whereas the Nurse Competence Scale (NCS) was used most frequently (n = 12; 75.0%).[33,51–61] The Professional Nurse Self-Assessment Scale (ProffNurseSAS) was used in three (18.8%),[48,49,62] and the EHTAN Questionnaire Tool (EQT) in one (6.2%)[50] study. Five studies explored RNs' competence in acute inpatient settings exclusively,[48,53,54,61,62] six studies collected data in both inpatient and outpatient acute settings,[33,50,56–59] one study each focused exclusively on the surgical functional area[49] and the outpatient surgical setting.[51] Two studies focused solely on inpatient long-term care[52,55] and one study included nurses from both inpatient acute and long-term care settings.[60]

4. Findings

We deductively categorized the extracted study results to a total of five main categories (experience, professional working context, formally acquired nursing qualifications, non-formally acquired knowledge and skills, and values) in line with theoretically reasonable factors for influencing the extent of nursing competence. Detailed descriptions of the included studies and the final structure of the categorized study results are presented in Appendix 2.

4.1 Experience

This category comprises synthesized results regarding RNs' age, overall work experience in years or months, duration of working in the current nursing area as well as the frequency of using respective competencies to gain task-specific experience.

4.1.1 *Age*

In each of the nine studies that described relationships between age and nursing competence, the Nurse Competence Scale was used. Five studies showed age correlating positively with total NCS scores; thus, nursing competence proportionally increases with increasing age.[33,55,56,59,60] The

competencies to manage situations are most frequently positively influenced by age, as well as competencies regarding quality assurance.[51,53,57,58] Participation in diagnostics and the work role-specific dimension[51,57,58] emerge respectively more developed in RNs of higher age. Furthermore, three studies found higher levels of competence in teaching-coaching and in the dimension of helping role,[53,57,58] while only two studies each showed an influence on competence in delivering therapeutic interventions and in teaching-coaching[57,58] and due to increasing age.

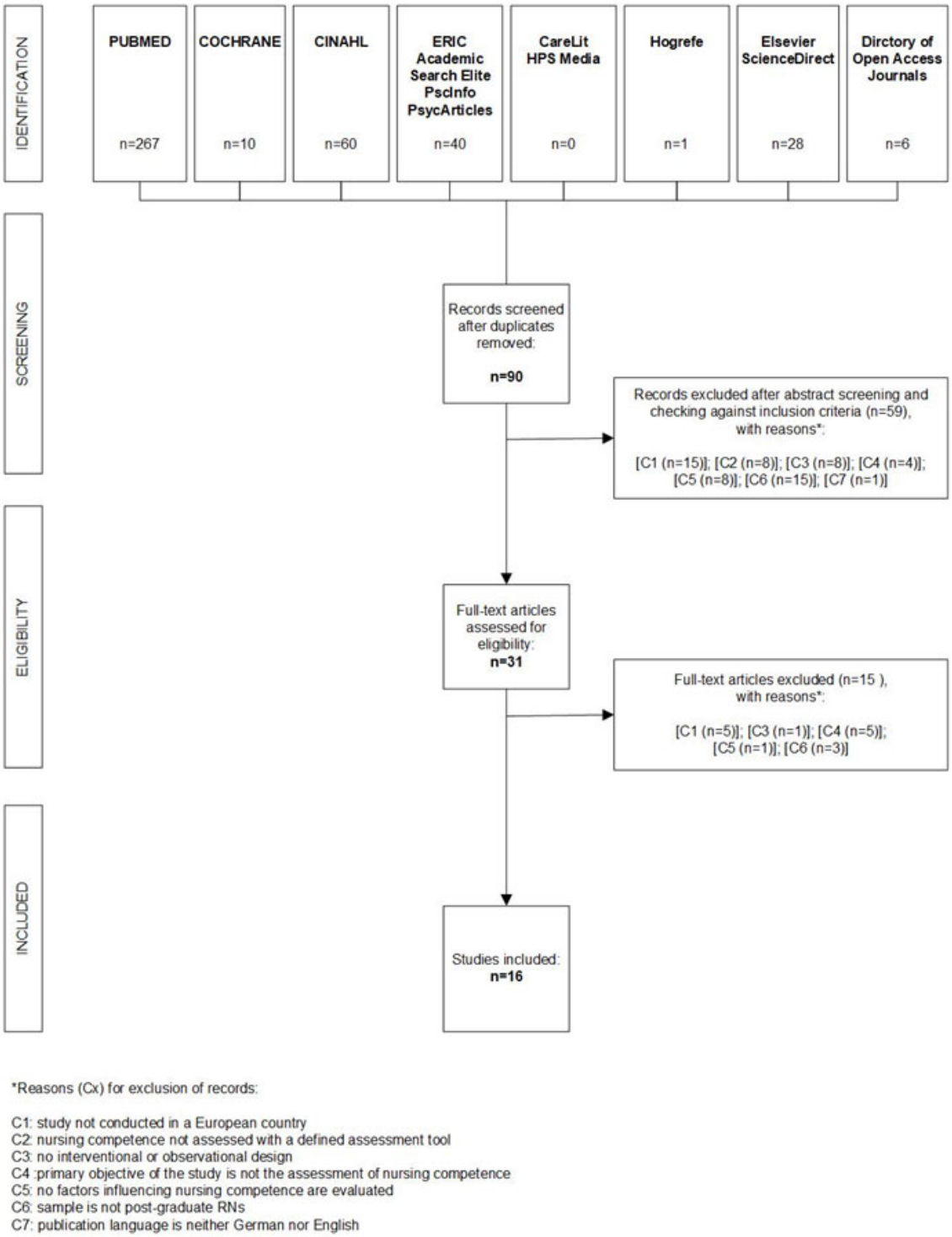

Figure 1. PRISMA ScR - Flow diagram (adapted from Peters et al.[43])

Table 1. Country-specific number of studies and publishing periods of the included publications (n = 16)

Country of study conducted	Number of studies conducted n (%)	Publication period earliest; most recent
Finland	7 (43.9)	2004; 2017
Sweden	4 (25.0)	2015; 2020
Norway	2 (12.5)	2012; 2018
Lithuania	1 (6.2)	2011
Italy	1 (6.2)	2020
United Kingdom*	1 (6.2)	2007
Total	16 (100)	2004; 2020

*study conducted in the United Kingdom, including data gathered in Germany, Greece, Belgium, Spain & United Kingdom

4.1.2 *Overall work experience*

Karlstedt et al.[55] and Meretoja et al.[33,56,57] demonstrate that RNs' competence, as measured by the total NCS scale score, is higher with increasing overall work experience. In those studies that examined associations between the dimension-specific competencies of the NCS and work experience, managing situations was found to be most influenced by work experience.[51,53,58] Additionally, competency extents increase with higher work experience in the scale dimensions work role, diagnostic functions, ensuring quality,[51,58] therapeutic interventions,[58,61] helping role,[53,58] and teaching-coaching.[58] Numminen et al.[61] observed in their cohort study of newly graduated nurses that the competencies of the surveyed cohort increased over the period of three years after graduation only in the dimension therapeutic interventions; the competency extents in the further six NCS scale dimensions remained unchanged.

In two studies[48,49] that assessed nursing competence using the ProffNurseSAS, positive correlations were observed between scale-specific competence scores and higher work experience as an RN. While competencies related to the scale dimensions clinical practice, professional development, clinical leadership, and cooperation and consultation were consistently higher for more experienced nurses in both studies,[48,49] the dimensions of ethical decision-making and critical thinking were only influenced by this factor in Allvin et al.[48]

4.1.3 *Work experience in current nursing area*

The influence of experience in the current professional work area is examined in five studies by using the NCS.[33,56–59] Regardless of the current professional environment surveyed (inpatient and outpatient acute care, specialty areas), nursing competence at the total scale level is consistently higher the longer the RNs have worked in the respective nursing area.

4.1.4 *Frequency of using competencies in respective nursing areas*

In a total of ten studies, the frequency of use of individual nursing competencies in the context of corresponding health care settings or disciplines is assessed by the NCS. Seven studies report the frequency of using respective competencies being directly proportional to competence extents across all NCS dimensions in the respective professional care settings and nursing disciplines (surgery, internal medicine, intensive care, emergency care, public health care).[33,51,54,56,57,59,61] Based on the descriptive data presented in the study by Hovland et al.,[52] a discrepancy can be identified with regard to the extent of the dimension-specific competencies of the RNs working in inpatient and outpatient surgery units and the frequency of use of the related competencies in the context of practical work. The most extreme difference appears in the NCS dimension ensuring quality, as the nurses display the highest competency scores in this dimension, but at the same time use the dimension-specific competencies most rarely in clinical practice.[52] The descriptive data in the study by Iacrossi et al.[53] likewise show that the estimated levels of competence at the dimension level and the frequency of use only correspond to a limited extent. On the one hand, the RNs rate themselves as highly competent in performing therapeutic interventions, its frequency of use in practice is only moderately high. On the other hand, they rate themselves least competent with regard to the dimension diagnostic functions, although they consider the frequency of use of the dimension-specific competencies to be high.[53] Karlstedt et al.[55] describe the competencies associated with the dimensions helping role, work role, and therapeutic interventions as most frequently used by RNs in the elderly care setting, while ensuring quality is used least frequently.

4.2 Formal qualifications

The competency extents of academically trained nurses differ significantly from vocationally trained nurses at NCS total scale level in two studies.[54,55] This result is contrasted by Meretoja et al.,[57] in their study no difference is found between RNs' competence with respect to different types of nursing education. Iacrossi et al.[53] underpin this result as they find no differences in the NCS dimensions helping role, teaching-coaching, diagnostic functions, therapeutic interventions, ensuring quality, and work role. Conversely, vocationally trained RNs are more competent in managing situations than their academically trained colleagues.[53] Blomberg et al.[49] use the ProffNurseSAS for dimension-specific comparison of the differently qualified RNs and describe higher competence levels in favor of academically trained RNs in the scale dimensions direct clinical practice, professional development, ethical decision-making,

clinical leadership, and cooperation and consultation, though there is no difference in the competences related to critical thinking. Cowan et al.[50] describe significant differences in the extents of nursing competence measured by the EQT when comparing nurses from five European countries with regard to the EQT's total scale scores. The descriptive results of this study further suggest that RNs trained in the United Kingdom have the highest competence scores across all scale dimensions with the exception of the dimension teamwork, whereas German RNs achieve the lowest competence scores in five EQT dimensions (communication, health promotion and illness prevention; personal and professional development; professional and ethical practice; research; development).[50]

4.3 Professional working context

RNs working in the operation theater have significantly lower competency levels in the NCS dimensions helping role, teaching-coaching, diagnostic functions and ensuring quality than RNs in surgical and internal wards, emergency nurses and RNs in intensive care units. Conversely, operating theater nurses are significantly more competent in managing situations.[33] Numminen et al.[58] show the competencies of RNs in the psychiatric setting to be highest on all seven dimensions of the NCS and those of RNs in the surgical discipline to be significantly lowest. RNs in high dependency units are most competent on five of the seven NCS scale dimensions as well as at the total scale level in a group comparison between intensive care unit, high dependency, combination of intensive care unit and high dependency, and emergency units.[59] Furthermore, the competence of nurses working in community health care is higher than of those working in specialist health care regarding NCS scale dimensions diagnostic functions, therapeutic interventions and work role.[60] Finally, nurses practicing in both inpatient and outpatient surgical nursing areas on a rotation basis score significantly higher across the NCS dimensions managing situations and ensuring quality compared to their colleagues who constantly work in the same work area.[51]

4.4 Non-formally acquired knowledge and skills

Study results indicate that non-formal further training with regard to clinical skills, communication, ethics, nursing management[54] or specialist education in geriatric care[55] result in higher NSC total scale scores. Additionally, nursing experience prior to the formal qualification to become a RN leads to higher competence with regard to NSC total scale scores[61] and across NSC dimensions diagnostic functions, managing situations and therapeutic interventions, respectively.[60] Finally, the non-formal acquisition of critical thinking skills and knowledge regarding scientific working correlate positively with the nursing competence at NCS total scale level.[60]

4.5 Values

According to Hamström et al.[51] and Meretoja et al.,[57] the status of the employment contract and the level of nursing competence correlate negatively to the disadvantage of a temporary employment contract with regard to NCS dimensions therapeutic interventions and ensuring quality and to the NCS total scale score. Furthermore, the higher the nurses' own expectations on their quality of care[54] and the higher the nurses' self-assessed quality of their nursing performance,[61] the higher is the extent of nursing competence. Finally, experiencing a greater amount of workplace autonomy[54] correlates with higher levels of competence on NCS total scale score as well as highly rated empowerment.[61]

5. Discussion

The aim of this scoping review was to identify theoretically reasonable factors that influence nursing competence of RNs in European countries. Experience, formal qualifications, professional work context, non-formally acquired knowledge as well as several values seem to be determinants for nursing competence and its development in different nursing areas and working contexts.

The included studies were conducted in six different European countries, with most of these studies exploring nursing competence in Scandinavian countries. Since the European Union is comprised of a total of 27 member states, this indicates that for most of these countries neither data on nursing competence nor scientific findings on factors influencing its development are available. This finding contradicts the European strategic directions for strengthening nursing and midwifery,[63] which outline continuous professional development and thus the assessment and promotion of nurses' competencies as one of the main goals. Barbezza et al.[64] emphasize the continuous evaluation of health professionals' competencies as a prerequisite for politically intended quality assurance of health care and patient safety. Particularly with regard to the constantly changing performance requirements in new health care sectors and the associated demands on nurses (e.g., community health nursing, public health nursing), knowledge of existing competencies and their characteristics, not least depending on factors other than formal qualifications, is crucial for the success of the implementation of new areas of responsibility for RNs.[65]

A prerequisite for the assessment of nursing competence is the availability of standardized and psychometrically tested instruments.[19] Nursing competence was assessed in the included studies by the Nurse Competence Scale, the

ProffNurseSAS, and the EQT. These instruments are based on different theoretical constructs, meaning that items and scale dimensions vary in terms of both their content and their denomination. Consequently, the results of those studies are hardly comparable. In addition, results on correlations or subgroup differences regarding influence factors and their association with the extents of nursing competencies are often presented merely on the basis of the total scale scores or dimension scores within the studies. Due to the instrument-specific different items which represent the basis for the respective scale dimensions, particular nursing competencies and their influence on the total scale scores or the respective dimension-specific scale scores are not discernible. This seems problematic, since each item per se means a specific nursing task and thus competencies with extraordinarily low or also high proficiency remain unconsidered. Above all, the specific derivation of implications and the promotion of competence-developing measures at the level of practice are only partially possible due to the high degree of abstraction of the results and thus reduce their particular practical usability.[31]

Experience has been described in several studies as a critical influencing factor for nursing competence. Both, the age of RNs and the years of professional nursing practice, are directly related to the extent of nursing competence. These results mirror the theory of competence development that describes the continuous competence acquisition and enhancement as a transformational process of mental functions from a novice stage to an expert level whereas pre-existing, acquired or mediated abilities and skills change along with the increase of experience.[66] Furthermore, nursing competency levels display a proportional association with the estimated frequency of the respective competency use, which is another hint for the relevance of experience. Learning through frequent repetition of certain nursing practices is an integral part of nursing education within simulation training and increases nursing students' competencies.[67] This type of learning appears to be perpetuated in professional practice, as repeated solving of similar, discipline-specific problems leads to ongoing development of skills[68] and their long-term memorization and vice versa.[69] Additionally, nurses from different medical disciplines and settings differ in terms of their competencies at dimensional and overall scale levels, although their RN qualifications do not differ. These findings confirm that the feasibility for continuous performance of tasks is a prerequisite for the development of context-specific competencies.[70,71]

Several European countries have increased RN education to the bachelor's level in recent years and decades with the rationale of increasing nurses' competencies.[72] Study results indicate higher quality of care and lower mortality rates due to academic training of RNs in Europe.[5] The influence of RN education on their nursing competence is also partially reflected in the comparison of study results in this review. Although both Meretoja et al.[57] and Iacrossi et al.[53] show no differences between academically trained nurses and vocationally trained nurses, Blomberg et al.[49] and Istomia et al.[54] describe significant differences in favor of RNs with academic training. Furthermore, competencies of nurses differ depending on the country in which they completed their qualification.[50] Nationally different legal regulations regarding training and subsequently defined tasks and accountabilities in the individual European countries[73] might plausibly explain these findings. When interpreting the results of the study by Cowan et al.[50] the time of study conduct must be taken into account too. Since then, several European countries have academicized their nursing education programs.[40,74] Nevertheless, nurses educated in Germany show the lowest competency extents in almost all competency domains of the EQT. Germany has still not realized higher nursing qualification and consequently has a below-average number of academic nurses in nursing practice across Europe.[75] The results on the influence of qualification on nursing competence may provide an impetus to strive[76] for a respective adaptation of qualification to European standards.[77,78]

Knowledge and skills are fundamental components of competence.[79] In the professional context, to a greater or lesser extent, objective-oriented continuing education and extracurricular educational activities can be subsumed as non-formal learning for the acquisition and development of knowledge and skills.[80,81] Moreover, non-formal learning is a central element of the concept of lifelong learning and continued professional development, respectively.[82] The influence of non-formal education regarding clinical skills, communication, ethics, nursing management, geriatric care, critical thinking and scientific working on nursing competence is well demonstrated by the results of several studies in this scoping review and thus underpin the value of continuing education in nursing.

Professional action is characterized both by values and by the quality of actively acting ethically.[23] At the beginning of their professional activity, nurses act predominantly without reflection on the basis of normative, formal guidelines; the increasing development of competence results in reflected performance with a recourse towards abstract regulations.[68,83] Perceiving one's own quality of care as satisfying, a high workplace autonomy and an experience of empowerment are critical values in professional nursing and thus prerequisites for delivering high standard care.[9,84,85] Consequently, the

findings from the included studies emphasize the positive influence of those values on nursing competence.

A methodological strength of the present review is that we strictly followed the Joanna Briggs Institute recommendations for conducting a scoping review.[43] The literature search was conducted independently by two researchers as an iterative process. Each search step and decision were transparently documented, and disagreements discussed so the search and study selection can be replicated and reviewed. These measures were able to minimize subjective misinterpretations. Nevertheless, reader bias in this regard cannot be completely excluded. Although we systematically searched a variety of different databases, additional relevant publications might have been identified by searching further databases. Furthermore, we limited our search to studies in German and English, thus publications in other languages might have remained undetected.

Formulating the research question using the PCC mnemonic ensured the precise, theory-based definition of inclusion and exclusion criteria. We defined the Concept of the PCC mnemonic based on a concrete theoretical framework of competence as our phenomenon of interest. Thus, theoretically reasonable influencing factors could be derived. In addition, we included only studies that used psychometrically validated assessment instruments to evaluate nursing competence. This should ensure the validity and reliability of the extracted study results.

We did not conduct any quality assessment of the methodological aspects of the included studies, so no judgements can be drawn on neither internal nor external validity, nor on potential bias. Although this is generally not the objective of a scoping review,[43] the results should be considered with this limitation.

The extracted study results were structured in terms of a deductive coding process which was performed independently by two researchers. The categorizations were consecutively compared in terms of interpretative reasoning and, if necessary, discussed within the research team until a consensual decision was reached to avoid subjective interpretive bias.

6. Conclusions and Recommendations

This scoping review indicates an influence on nursing competence by the factors experience, qualifications, professional work context, non-formally acquired knowledge and different values. Advanced age and higher frequencies of years working in the nursing profession influence the competence of RNs, thus policy makers are challenged to take appropriate measures to ensure the retention of nurses in order to safeguard the quality of health care by relying on experienced, highly competent nurses. The transition of RN qualifications from vocational training to academic training is widely promoted throughout Europe, but the conviction of an accompanying general increase in nursing competence is only partially reflected in the study results. However, it appears appropriate to focus on further qualification programs as well as discipline-specific specializations. The advancement of specific competencies regarding to different professional nursing fields beyond the competencies acquired within the framework of generalist qualifications is recommended. Additionally, since workplace autonomy and empowerment seem critical for the development of RNs' competencies, the establishment of respective organizational structures is indicated. Our findings suggest that for most European countries there are neither scientific data on the extent of nursing competence nor on its influencing factors available. Furthermore, there is little evidence on the development of nursing competencies based on longitudinal data. Future research should on the one hand side focus on the systematic, continuous assessment of competencies to evaluate the long-term impact of influencing factors and to gain a better understanding of competence development. The results of large-scale instruments, on the other hand side, might only provide a merely superficial synopsis of higher or lower extents of individual competencies. Subsequent explorations of quantitative results should be conducted by using competency-specific assessment instruments or qualitative methods.

Conflicts of Interest Disclosure

The authors declare that there is no conflict of interest.

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