



Review

MAPPING COMPETENCIES FOR SPECIALIST NURSES IN EUROPE: A SCOPING REVIEW

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ABSTRACT

Background: Specialist nurses play a pivotal role in addressing Europe's complex health needs, including aging populations, rising chronic diseases, and shortages of healthcare professionals. However, the development of specialist nursing roles across Europe remains fragmented, with significant variation in education, competencies, and recognition between countries. While international models provide well-established frameworks for advanced nursing practice, European efforts to harmonize specialist nursing competencies have been inconsistent. This scoping review aimed to map and synthesize the available literature and frameworks on specialist nursing competencies in Europe.

Methods: This scoping review followed the JBI methodology and PRISMA-ScR reporting guidelines. Studies and policy documents focusing on specialist nurses, their core competencies, and educational frameworks in Europe were included, alongside relevant grey literature. Searches were conducted in CINAHL, MEDLINE, PsycArticles, Web of Science, PubMed, Cochrane Library, ProQuest, and Google Scholar. Two reviewers independently screened and extracted data, and findings were synthesised narratively.

Results: A total of ten studies were included, spanning single-country analyses (e.g., Scotland, Finland) and multi-country European and international initiatives. Most studies focused on role development, competency identification, or curriculum design for specialist and advanced practice nurses.

Common competency domains identified included clinical care, leadership, communication, education, and research. Evidence from feasibility and evaluation studies demonstrated that advanced and specialist nursing roles improve accessibility, continuity, and quality of care, particularly in primary and community health settings. Despite variation in educational pathways and regulatory frameworks, the studies consistently supported the feasibility and necessity of advanced practice roles and underscored the need for greater harmonisation across Europe.

Conclusions: Specialist nurses make a measurable contribution to patient safety, care accessibility, satisfaction, and potentially cost-effectiveness. Nonetheless, differences in regulation, role recognition, and practice scope continue to challenge cross-country harmonisation and professional mobility. To fully leverage the potential of specialist nurses in achieving EU health priorities, sustained investment in policy development, legislative alignment, and outcome-based research is crucial.

Keywords: Competency Mapping, Specialist Nurses, Nursing Competencies, Advanced Nursing Practice, Professional Standards.

INTRODUCTION

Nursing is a dynamic profession, continually evolving due to external and internal influences, including contextual advancements and internal advances within the field (1).

Specialist nurses play a crucial role in the European healthcare system, especially as the region confronts intricate health issues such as aging populations, rising chronic disease rates, and the demand for sophisticated therapeutic interventions. They are distinctly qualified to tackle these challenges, providing specialized knowledge in healthcare areas that necessitate advanced training and a comprehensive understanding of particular patient requirements (2).

External factors impacting professional development encompass demographic and epidemiological shifts (3). Healthcare policies are progressively prioritizing prevention and the advocacy of a healthy lifestyle (4). Advancements in information and communication technology profoundly impact nursing practices, as nurses increasingly employ web-based information, electronic records, and online communication. Moreover, significant emphasis is placed on the autonomy of individual professionals and their degree of influence within social and healthcare policy (5).

Internal challenges also affect the nursing profession. Internal factors relate, for instance, to the continuous academic progression in nursing. The number of nursing science university departments is rising, alongside the increase in nursing scholars, which corresponds with the intensified emphasis on evidence-based nursing practice (6,7). Another issue is in the labour sector; most Western countries face shortages of qualified healthcare personnel (8,9). The deficit of physicians, along with the proliferation of nursing specializations, is enabling role transitions between physicians and nurses (10-12). Duty shifting denotes the reallocation of obligations, in which a duty is either partially or entirely transferred to another profession. Examples encompass the transfer of responsibility from physicians to qualified nurses for medication prescription and the administration and treatment of patients with chronic illnesses (13).

Both internal and external factors, together with their influence on the nursing profession, are expected to be reflected in the professional competency frameworks for nurses. 'Competencies' denote the knowledge, skills, attitudes, and capacity to do tasks proficiently in a professional environment (5, 14). Nonetheless, their execution within the European Union has been delegated to the discretion of Member States, leading to a disjointed approach throughout the continent (15). Within the European regulatory framework, Directive 2005/36/EC (amended by Directive 2013/55/EU) provides automatic recognition only for general nursing qualifications (Registered Nurse – RN). Specialist nursing roles and advanced practice qualifications are not subject to automatic recognition and remain governed by national regulations, resulting in considerable heterogeneity across member states. This regulatory nuance was considered in the interpretation of findings and the contextualization of competency frameworks across Europe.

The function of the 'specialist nurse' (SN) has developed to address healthcare requirements and the evolving landscape of nursing care (16). The International Council of Nurses

defines the Nurse Specialist as a nurse educated beyond generalist preparation and authorized to practice with enhanced competencies in a defined area of nursing. Specialist practice is understood to include clinical, educational, administrative, research, and consultancy roles (17). However, despite this explicit framework, challenges persist in practice. European Commission noted that "Nurses possessing a recognized specialty in their home Member State (MS) frequently lack a formally specified separate field of activity." In practice, while access to the SN title is determined at the national level, the actual scope of SN roles is typically shaped by healthcare markets. As a result, hospitals and nurse managers may employ either a specialized nurse or a general care nurse for the same position, with no guaranteed entitlement of the specialist nurse to specific roles or responsibilities. SNs have acquired their proficiency in the clinical domain, where they cultivate competencies and skills for a certain domain of healthcare. They have achieved this by enhancing their preregistration programs, as well as throughout general or post-basic education (18). In Europe, pre-registration nursing education for general care qualification adheres to specified standards for the mutual recognition of professional qualifications (16). However, education for SNs lacks such protections. The qualifications for nursing related to a "specialisation" exhibit significant variation in both professional and academic rewards at all levels: preregistration diploma, bachelor's, master's, and doctoral degrees (19).

Directive 2013/55/EU provides guidance, definitions, and descriptors for entry-level qualifications for registered nurses in general care, specifying education, qualifications, certifications, regulations, scope of practice, and associated skills (18).

While international literature—especially from the USA and Canada—offers an extensive body of work on the advanced practice nurse role, where professional pathways such as the nurse practitioner and clinical nurse specialist have been established over more than four decades, European nursing has not uniformly adopted these frameworks. Instead, a wide range of professional designations exists, including nurse specialist, clinical nurse specialist, nurse practitioner, advanced nurse in a specialty, higher level practitioner, nurse consultant, professional nurse, and expert nurse (20-24).

The imperative to harmonize specialist nursing competences across Europe is accentuated by the escalating dependence on specialist nurses to bridge significant gaps in healthcare provision, especially in underserved regions that suffer from acute shortages of medical professionals. The increasing dependence on specialized care signifies a broader movement towards tailored healthcare solutions in response to the intricate challenges faced by contemporary societies. By fostering a cohesive educational framework aimed at achieving specialist proficiency, initially in general nursing and subsequently in specific disciplines, the European Union can guarantee that its nursing workforce is sufficiently equipped with the requisite skills and knowledge to effectively address these shifting healthcare demands. Harmonization not only promotes the

standardization of training and competencies but also fortifies the overall resilience and adaptability of healthcare systems throughout the continent. Such strategic educational alignment is essential for improving healthcare outcomes and ensuring that healthcare systems remain robust and responsive to both present and future health crises (7).

This scoping review aimed to map and synthesize the available literature and frameworks on specialist nursing competencies in Europe, highlighting existing gaps and possibilities for standardization. The specific objectives of the review were to identify and categorize the competencies required for specialist nursing roles across European countries and to examine the extent to which these competencies were aligned with or misaligned from EU healthcare priorities and policies.

METHODS

The scoping review adhered to the JBI approach for conducting scoping reviews (25) and presented using the Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping reviews (PRISMA-ScR) flow diagram, as outlined in the PRISMA-ScR statement (26). The review protocol was not registered in an open repository such as the Open Science Framework (OSF).

INCLUSION CRITERIA

Participants

The review encompassed studies and documents that focused on specialist nurses, defined as those who had completed advanced training or education in a specific area of nursing practice. It also included materials addressing the perspectives of educators, policymakers, and healthcare organizations involved in developing or implementing nursing education and competency frameworks.

Concept

The review included studies that examined or analysed the competencies required for specialist nursing roles, as well as the educational models, pathways, and frameworks used for their preparation. This encompassed a framework outlining the core skills, knowledge, and attitudes expected of specialist nurses, along with the structure and content of their educational programs.

Context

The context focused on European countries, incorporating studies and frameworks relevant to healthcare systems, regulatory bodies, and educational institutions within Europe. It also considered documents that addressed transnational or EU-level initiatives aimed at harmonizing nursing education and competencies across borders.

Types of Sources

The scoping review encompassed a comprehensive examination of multiple study designs, including quantitative, qualitative, and mixed-method research. Grey literature included government reports, professional organization guidelines, white papers, and documents from EU institutions or regulatory bodies. In addition, educational frameworks, curriculum outlines, and competency standards from national and international nursing organizations were incorporated to provide a thorough understanding of the topic.

Search strategy

An initial search was conducted in one database to identify keywords and index terms. Based on this, a strategy was developed for searching additional databases. CINAHL Ultimate, MEDLINE, PsycArticles (EBSCO), Web of Science, PubMed, and the Cochrane Library were searched. Grey literature was explored through the ProQuest Dissertations & Theses Database and Google Scholar. In Google Scholar, the first 100 results were screened following a stopping rule whereby screening ceased after 20 consecutive irrelevant results; the screening process was conducted in descending relevance order. The searches were performed on 9th June 2024. All published and unpublished studies written in English were considered for eligibility.

The search strategy was tailored to each database and information source, considering all relevant keywords and index terms. The primary search string applied was: ("Nurse Specialists" OR "Clinical Nurse Specialists" OR "Nurse Practitioners") AND ("Competency" OR "Competence") AND "Europe". The reference lists of all included sources were also screened to identify additional relevant studies. Only studies published in English were included. This may introduce language bias and limit the inclusion of relevant studies published in other European languages.

The full search strategies for all databases, including detailed Boolean operators, filters, and index terms, are provided in Appendix A.

Study/Source of Evidence selection

The citations of relevant studies were imported into the reference management software EndNote (27) to remove duplicates. The titles and abstracts were evaluated by two independent reviewers to determine their compliance with the inclusion criteria established for the review. Rayyan was used to accelerate the initial evaluation of abstracts and titles through a semi-automated procedure that emphasized usability (28). Two reviewers then thoroughly assessed the full text of selected citations against the inclusion criteria. The scoping review documented and described the rationale for excluding sources of evidence at the full-text stage if they did not meet the predetermined criteria. Any conflicts among the reviewers at each stage of the selection process were resolved through deliberation or, when necessary, by involving an additional reviewer. The comprehensive findings of the search and study selection were fully documented in the final scoping review (Figure 1).

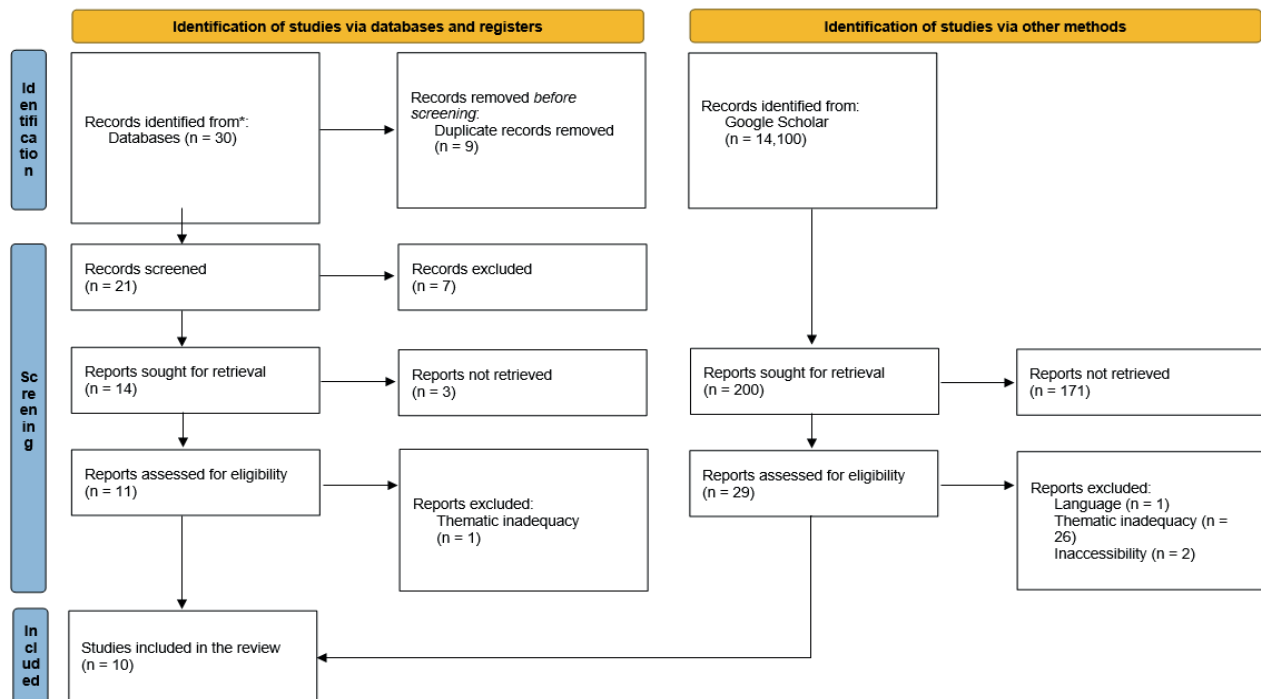


Figure 1. PRISMA Flow Diagram

DATA EXTRACTION

Two independent reviewers independently extracted data using a data extraction instrument (29). Data were extracted from the included studies on several key variables: author(s), year of publication, and country of origin, as well as the aims and purpose of the study, the methodology employed, and any competency frameworks described. Outcomes and their details, together with key findings relevant to the scoping review question, were also recorded. Finally, each source was assessed for its relevance to European Union healthcare priorities.

DATA ANALYSIS AND PRESENTATION

The findings were condensed and presented according to the primary categories of the data extraction templates, organized to directly address the objectives of the review. The results were reported in the form of a narrative summary (30).

RESULTS

A total of ten studies were included, representing a wide geographical spread from single-country analyses such as

Scotland (31) and Finland (32) to multi-country European initiatives including the Nordic and Baltic comparison (33), the European perioperative nursing curriculum (34), the European Family and Community Nurse competencies (35), the EWMA survey of wound care (36), and postgraduate student self-assessments (37). Two further studies explored the feasibility of advanced roles in Scandinavia (38) and the effectiveness of nurse practitioners in EU health systems (39). Finally, a global perspective was offered by the international mapping of NP/APN roles across 19 countries (40) (Table 1).

Although this scoping review primarily focuses on specialist nurses (SN)—defined as nurses who have undertaken advanced education or training in a specific clinical area—it acknowledges the conceptual overlap and terminological variation across European contexts with advanced practice roles, including Advanced Practice Nurses (APN), Nurse Practitioners (NP), and Clinical Nurse Specialists (CNS). Where studies on APN roles were included, this was justified by their relevance to the mapping of specialist nursing competencies, particularly in cases where the roles, responsibilities, and educational pathways aligned with national definitions of specialist practice. To reflect this broader scope, the review title and inclusion criteria were adapted to encompass both specialist and advanced nursing roles where appropriate.

Table 1. Extracted studies

Author	Sulosaari et al. (33)
Country	Nordic & Baltic region
Aim	To compare master s-level Advanced Practice Nurse (APN) programmes in the Nordic and Baltic countries and identify commonalities and differences.
Methodology	Descriptive comparative review of seven master's APN programmes.
Framework	European Tuning Project (ETP) APN competencies and the International Council of Nurses (ICN) guidelines on advanced practice were used as the comparison/evaluation framework.
Relevance to EU Health Priorities	Addresses EU-relevant priorities: strengthening health workforce capacity and retention, task-shifting and workforce redesign to improve access and sustainability, evidence-based education to support quality & safety, and preparing nurses to respond to ageing populations and chronic disease burden
Strengths and limitations	Strengths: multi-country, expert informants from programme leads, explicit mapping to ETP & ICN competency frameworks, updated data, clear tables on admission, ECTS, clinical training, and competencies. Limitations: sample limited to selected HEIs; Sweden and Latvia not represented; heterogeneity of HEI types (universities vs universities of applied sciences) limits direct comparability; possible programmes under development not captured.
Key findings	Most reviewed APN programmes corresponded with ETP and ICN recommended competencies. Main differences: admission requirements, total ECTS, and how clinical training is implemented. Variation exists in prescribing and diagnostic authority: prescribing is integrated/limited in some countries, absent or separate in others. All programmes included clinical training, but format and credit weighting differed widely.
Author	Macduff et al. (31)
Country	Scotland
Aim	To evaluate the educational programme developed to prepare Family Health Nurses (FHNs) in Scotland, in the context of the WHO Europe pilot project.
Methodology	Mixed-methods external evaluation: curriculum review, observation of teaching/assessment, student & supervisor questionnaires, group interviews, individual teacher interviews, analysis of assignments, comparison with WHO Europe FHN curriculum.
Framework	WHO Europe Family Health Nurse curriculum and UKCC Specialist Practice Framework. Also influenced by North American family nursing models.
Relevance to EU Health Priorities	Addresses EU/WHO priorities: strengthening the primary care workforce in remote/rural areas, improving access to care, retention of experienced nurses, and family- and community-oriented health promotion.
Strengths and limitations	Strengths: Tailored to Scottish remote/rural needs, strong grounding in family systems theory, valued communication & family assessment skills, innovative blend of campus & distance learning, policy-practice linkages. Limitations: Over-assessment, weak supervisor preparation, lack of leadership/management focus compared to WHO design, problematic APL/APEL process, limited role clarity in early implementation.
Key findings	Produced a distinctively Scottish "hybrid" FHN curriculum, more practice-oriented than WHO version. Focused on care provider, decision-maker, communicator roles rather than community leader/manager. - Course created new professional identity but raised challenges. Provides a precedent for other specialist community nursing education in the UK.

Author	Bagnasco et al. (35)
Country	10 European countries: Belgium, Croatia, Germany, Greece, Italy, Slovenia, Spain, Sweden, Switzerland, UK.
Aim	To identify the core competencies of Family and Community Nurses (FCNs) as a basis for a European curriculum.
Methodology	4-round e-Delphi study.
Framework	Based on WHO recommendations, EU ESCO classification, and European Credit System for Vocational Education and Training (ECVET); linked to EU/EQF level 7 for postgraduate nursing education.
Relevance to EU Health Priorities	Directly addresses EU priorities: ageing population, chronic disease management, community-based primary care, digital health/e-health, workforce upskilling and mobility.
Strengths and limitations	Strengths: multi-country expert panel; rigorous Delphi design; integrated WHO, ESCO, EQF frameworks; resulted in standardised EU-wide competencies. Limitations: uneven geographic balance, potential group conformity in later Delphi rounds, expert motivation bias.
Key findings	Competencies cover clinical care, communication, leadership, health promotion, chronic disease management, community assessment, cultural competence, policy, and digital/e-health. Provides basis for a European FCN curriculum and supports professional recognition of FCNs across the EU.
Author	EORNA (34)
Country	Developed by the European Operating Room Nurses Association with participation from 24 countries.
Aim	To standardize perioperative nursing education across Europe, improve patient safety and quality of care, promote professional recognition of perioperative nurses, and enable free movement of nurses within the EU.
Methodology	Built on evidence-based practice, the EU definition of competence, and constructive alignment between objectives, teaching, and assessment. Structured as a 60 ECTS programme (30 theory, 30 practice), with continuous assessment including exams, clinical evaluations, and a research project.
Framework	Based on five Core Competency Domains: 1) Professional, ethical, legal practice; 2) Nursing care and perioperative nursing practice; 3) Interpersonal relationships and communication; 4) Organisational, managerial and leadership skills; 5) Education, research and professional development.
Relevance to EU Health Priorities	Aligns with EU goals on patient safety, quality of care, and workforce mobility. Supports mutual recognition of qualifications, cross-border healthcare, and lifelong learning. Enhances capacity for safe and consistent perioperative care across Europe.
Strengths and limitations	Strengths: Provides a common benchmark for education; promotes standardisation, mobility, and recognition; adaptable to national systems; strong emphasis on clinical practice; integrates research and lifelong learning. Limitations: Recognised only as a minimum standard — some countries may require more extensive training. Variations in national roles (e.g., anaesthesia nurses, surgical assistants). Implementation depends on national adoption and resources.
Key findings	A common core curriculum is both feasible and necessary for safe perioperative care across Europe. It strengthens professional identity and improves patient outcomes. Regular updates show adaptability to evolving healthcare needs. The framework ensures a holistic, patient-centred approach while preparing nurses for leadership, education, and research roles.

Author	De Leede – Brunsveld et al. (39)
Country	Primarily European Union (EU) member states; also references the USA, Canada, and Australia for comparison.
Aim	To examine evidence on the role and effectiveness of Nurse Practitioners in primary and community health care, and assess their potential contribution to strengthening the EU health system.
Methodology	Rapid review.
Framework	Structured around four guiding questions: (1) NP role in community health care, (2) impact on patient outcomes, (3) impact on costs and efficiency, (4) policy and practice implications for the EU.
Relevance to EU Health Priorities	Supports EU goals of strengthening primary care, reducing inequalities, improving access, and ensuring sustainability of health systems; highly relevant to physician shortages, ageing populations, and chronic disease management.
Strengths and limitations	Strengths: Broad coverage of international evidence; focus on transferable lessons for the EU context. Limitations: Rapid review gives less depth; variability in NP roles across countries; limited long-term EU studies.
Key findings	NPs deliver care equal or superior to physicians in specific areas; high patient satisfaction and improved access; potential cost savings in prevention and chronic disease management; successful EU implementation requires regulatory changes, standardized training, financial sustainability, and integration into health teams.
Author	Fagerdahl (36)
Country	The study covered 22 European countries through representatives of 32 EWMA cooperating organisations.
Aim	To gain an overview of the current organisation of negative pressure wound therapy (NPWT) in primary care across Europe.
Methodology	Cross-sectional study.
Framework	The survey addressed: (1) use of NPWT in primary care, (2) organisation and responsibility (hospital vs. primary care), (3) staff training and education, (4) monitoring of NPWT, and (5) financing and payment structures.
Relevance to EU Health Priorities	Highly relevant to EU priorities of strengthening primary care, ensuring equitable access, cost-effectiveness, and patient-centered care. NPWT in community/home settings supports the EU focus on reducing hospital stays, shifting care to outpatient and home environments, and addressing health system sustainability.
Strengths and limitations	Strengths: Provides the first broad European overview of NPWT organisation in primary care; highlights diversity of approaches. Limitations: Responses came from association representatives and may not fully represent all regions of a country; variation in healthcare systems complicates comparison; descriptive, not analytical.
Key findings	NPWT is used in primary care in 95% of countries surveyed. Most often initiated and prescribed by hospitals (63%), which remain responsible for treatment. Training varies widely, often informal or supported by manufacturers. NPWT use in primary care is limited but should be expanded for economic and patient-centered reasons.

Author	Wangensteen et al. (37)
Country	Multi-country European study. Data collected from postgraduate nursing students in Norway, Sweden, Iceland, the Netherlands, and the United Kingdom.
Aim	To describe nurses' self-assessment of clinical competence and need for further training, and to explore differences between nurses in specialist vs. master's programs.
Methodology	Cross-sectional study.
Framework	Based on the Nordic APN model and the ICN framework for advanced nursing practice competencies, integrating Aristotelian concepts of knowledge.
Relevance to EU Health Priorities	Supports workforce upskilling, patient safety, interprofessional collaboration, and advanced practice roles – all aligned with EU priorities on addressing ageing populations, chronic disease management, and ensuring quality of care across member states.
Strengths and limitations	Strengths: Multi-country design; inclusion of both specialist and master's level nurses; validated instrument; insight into competence gaps relevant to advanced practice nursing. Limitations: Small sample (<100); convenience sampling; unequal distribution of participants across countries; possible cultural/educational differences not fully accounted for.
Key findings	Nurses rated themselves highest in responsibility, cooperation with other professionals, and ethics. Lowest ratings in health promotion, medication knowledge, differential diagnoses, and quality development. Master's students rated higher competence than specialist program students on most items. Nurses in specialist programs reported a greater need for further training. Medication knowledge and differential diagnosis were the top areas needing improvement.
Author	Boman et al. (38)
Country	Conducted in Scandinavia (Sweden, Norway, Denmark, and the Faroe Islands)
Aim	To explore the feasibility of introducing geriatric nurse practitioners (GNPs) in primary health care (PHC) in Scandinavia from multiprofessional and older persons' perspectives.
Methodology	Qualitative research.
Framework	Findings were structured into three domains: 1) Current challenges in health services for older populations; 2) The envisioned GNP scope of practice; 3) Factors influencing implementation.
Relevance to EU Health Priorities	Addresses healthy ageing, workforce shortages, and the need for integrated and accessible care for older adults, aligning with EU goals on patient safety, quality of primary care, and sustainability of health systems in the context of ageing populations.
Strengths and limitations	Strengths: Highlights multistakeholder perspectives; identifies gaps in current PHC provision; shows potential of GNPs to improve continuity, accessibility, and holistic care; links to international evidence on advanced nursing practice. Limitations: Conducted by students with limited research experience; linguistic and cultural differences across countries may have influenced results; lack of clarity on role definitions and regulatory frameworks.
Key findings	Introducing GNPs in PHC is feasible and potentially beneficial. GNPs could address workforce gaps, provide advanced geriatric competence, and act as a link between patients, nurses, and physicians. However, success depends on clear role definitions, regulatory reforms, allocation of resources, and openness to organisational change.

Author	Sastre – Fullana et al. (40)
Country	19 countries across Africa, Australia, Asia, Europe, and North America
Aim	To improve global understanding of NP/APN roles by: 1) examining role definitions, competencies, and standards of practice; 2) describing common features of NP/APN roles using the Strong Advanced Practice Model; 3) testing the use of text mining and visual analytics for identifying common clusters of concepts.
Methodology	Secondary analysis of the ICN NP/APN Research Subgroup's comparative mapping.
Framework	Based on the Strong Model of Advanced Practice with five domains: 1) Direct comprehensive care, 2) Education, 3) Support of systems, 4) Research, 5) Publication and professional leadership.
Relevance to EU Health Priorities	Offers evidence for harmonisation of advanced practice nursing roles across countries, supporting EU efforts in workforce planning, patient safety, cross-border mobility, and recognition of qualifications. Provides insights into global standards that can inform EU policy on advanced practice nursing.
Strengths and limitations	Strengths: First large-scale global comparative analysis of NP/APN roles; innovative use of text mining and visual analysis; identified common elements across practice domains such as evidence-based care, leadership, patient-centeredness, and teaching. Limitations: Weak clustering across domains. Only 32% of data aligned well with the Strong Model; 68% of data remained outside clusters, highlighting high variability in NP/APN roles globally.
Key findings	Despite variability, common concepts emerged: in direct care, education, systems support, research, and leadership. Findings show that global variability limits clarity and implementation of APN roles but also that there are shared foundations that could guide future international frameworks.
Author	Jolkiniemi et al. (32)
Country	Finland
Aim	To describe Finnish perspectives on APN roles, identify drivers and barriers for their development, and place Finland's experience in a broader international context.
Methodology	Integrative review and policy analysis.
Framework	Uses the ICN definition of NP/APN and compares Finnish developments to international APN models. Explores APN through domains of education, scope of practice, regulation, and system integration.
Relevance to EU Health Priorities	Addresses EU goals related to workforce mobility, patient safety, cost-effective care, and aging populations. Highlights the need for harmonized APN roles across Europe to reduce variation and support health system sustainability.
Strengths and limitations	Strengths: Provides national-level insight into APN role development; highlights Finland's strong educational system as a basis for APN; situates Finland within international and EU contexts; identifies clear policy recommendations. Limitations: APN in Finland remains inconsistent in implementation; lack of formal role recognition and regulation; variations in role definitions across settings; limited empirical data on APN outcomes in Finland.
Key findings	Finland has potential for strong APN role development due to high nursing education standards, but faces challenges related to role clarity, regulation, and policy support. There is broad agreement that APN roles could strengthen primary and specialized care, particularly for ageing populations, but sustained policy, legal, and organisational commitment are needed to ensure full integration.

The aims of the studies varied but consistently focused on role development, competency identification, or programme evaluation for advanced or specialist nurses. Education and curriculum design were central in studies from the Nordic and Baltic region (33), Scotland (31), ten European countries on Family and Community Nursing (35), and perioperative nursing (34). Other work examined the feasibility of new roles, particularly geriatric nurse practitioners in primary health care (38), or evaluated the effectiveness of nurse practitioners in European primary and community care (39). Additional perspectives included mapping wound therapy practices across Europe (36), self-assessment of competence among postgraduate nurses (37), and national policy analysis of Finnish SN roles (32). On a global level, the ICN NP/APN mapping study offered comparative insights into role definitions and competencies across continents (40).

Methodologies reflected this diversity. Comparative curriculum reviews (31,33,34), Delphi consensus (35), and cross-sectional surveys (36,37) contrasted with qualitative stakeholder interviews (38), rapid review (39), policy analysis (32), and secondary text mining with visual analytics (40). This variation highlights the still evolving stage of advanced practice nursing research in Europe and internationally, with emphasis on feasibility, description, and consensus-building rather than long-term outcome evaluation.

All studies demonstrated clear relevance to EU health priorities. They addressed strengthening of the nursing workforce (33,35,37), ensuring patient safety and high-quality care (32,34), responding to ageing populations and chronic disease burden (31,38,39), and promoting professional mobility and harmonisation (40). The organisation of wound therapy across Europe (36) also reflected EU goals on shifting care to primary and community settings and ensuring sustainability.

Key findings converged on the recognition that advanced practice and specialist nursing roles are both feasible and necessary. Most curricula and programs were found to align with international competency frameworks, although differences were observed in admission requirements, scope of prescribing, and the implementation of clinical training (31,33,34). Competency consensus studies identified core domains including clinical care, communication, leadership, education, research, and policy engagement (35,40). Feasibility studies highlighted the potential of roles such as geriatric nurse practitioners to improve continuity and accessibility of care for older persons (38), while reviews and evaluations emphasised the capacity of nurse practitioners to deliver high-quality, cost-effective primary care (39). At the national level, Finland was recognised as having strong educational foundations for SN development but lacking regulatory clarity (32). Collectively, the evidence demonstrates that while variation persists across Europe and globally, common competencies and benefits of advanced practice nursing are well established, and further harmonisation is both desirable and necessary.

DISCUSSION

This scoping review mapped and synthesised evidence on advanced practice and specialist nursing roles and curricula across Europe and, where relevant, in global contexts. Ten studies were included, spanning national-level analyses, multi-country European initiatives, and global comparative projects. Collectively, these studies highlight the growing momentum to expand and standardise SN roles, yet also underscore substantial heterogeneity in role titles, scope of practice, education, and regulation.

Despite these differences, several commonalities emerged. Across contexts, core competencies were consistently identified in clinical practice, communication, leadership, health promotion, research, education, and policy engagement (33-35, 40). Studies evaluating feasibility or impact demonstrated that SN roles can deliver care equal to or better than physicians in specific domains (39), improve continuity of care for older adults (38), and strengthen specialist domains such as perioperative nursing (34) and wound care (36). However, gaps in role clarity, regulatory frameworks, and consistent recognition continue to impede full integration into health systems (31,32).

COMPARISON WITH EXISTING LITERATURE AND INTERNATIONAL CONTEXT

The findings of this review align closely with international evidence emphasising the value of SN roles in addressing health system challenges. The International Council of Nurses (41) and World Health Organization (42) have repeatedly highlighted advanced practice nursing as an essential component of workforce capacity building, particularly in response to ageing populations, chronic disease, and physician shortages. The ICN definition of SN as a nurse with expert knowledge, advanced clinical competence, and context-specific scope of practice was consistently used across the included studies, either explicitly (32,33) or indirectly through competency mapping (35,40).

At the European level, the results align with EU health workforce strategies that advocate for the harmonization of qualifications, mutual recognition of roles, and mobility across borders. For example, the European Tuning Project and ESCO/EQF frameworks, which informed several included studies (33,35), are central tools in aligning higher education and vocational competencies with EU-wide standards. This suggests that while progress has been made, the pace of implementation and the depth of regulatory adaptation vary substantially across countries. The convergence on core competencies across studies in this review reflects international guidance and policy briefs, which have long emphasised the domains of clinical care, leadership, education, and research (41).

IMPLICATIONS FOR EU HEALTH SYSTEMS AND POLICY

The relevance of SN role development to EU health priorities was evident across all studies. Strengthening primary care, ensuring continuity and accessibility for ageing populations, and improving the sustainability of health systems are recurring priorities that SNs are well placed to address (31,38,39). Similarly, perioperative, and wound care curricula show how specialist roles can contribute to patient safety and efficiency by standardising competencies and shifting care from hospital to community settings (34,36).

From a policy perspective, harmonisation remains critical. The evidence demonstrates that SN education is increasingly aligned with international frameworks, but regulatory structures lag. Without clear legal recognition and protected role definitions, the benefits of mobility, mutual recognition, and workforce flexibility cannot be fully realised. This is particularly pertinent in countries such as Finland, where educational readiness for SN roles is high, yet regulation and formal recognition remain underdeveloped (32). The EU therefore faces a dual challenge: consolidating advances in education and curriculum design while accelerating progress in regulation and system-level integration. The variability in education, scope, and regulation of advanced and specialist nursing roles identified in this review echoes earlier findings on specialist nurses across Europe. Importantly, they highlighted that the absence of automatic recognition mechanisms for specialist nurses continues to hinder mobility and role clarity within the EU (18).

Persistent variation in regulation and recognition of APN and specialist roles, as noted in our findings, mirrors broader challenges documented in the EU's Directive 2005/36/EC on recognition of professional qualifications, where nursing specialisations lack automatic recognition across borders.

PRACTICE AND EDUCATION IMPLICATIONS

The review underscores the importance of embedding SN education within established competency frameworks, such as the European Tuning Project, the ICN NP/APN guidelines, and the Strong Model of Advanced Practice. Curricula mapped in the Nordic, Baltic, and European contexts demonstrate considerable progress in aligning with these frameworks, though variation persists in admission requirements, clinical training hours, and prescribing authority (31,33,34).

Feasibility and outcome-focused studies provide strong indications that SN roles contribute to improved patient outcomes, higher satisfaction, and potential cost savings, particularly in chronic disease management and geriatric care (38, 39). However, most studies remain descriptive or consensus-based. There is limited empirical evidence on long-term outcomes of SN integration in Europe, such as impacts on health system costs, interprofessional collaboration, or career trajectories of SNs themselves. Future research should therefore prioritise robust evaluations of outcomes at patient, provider, and system levels.

STRENGTHS AND LIMITATIONS OF INCLUDED STUDIES AND REVIEW

Strengths across the included studies included the use of multi-country samples (33-37, 40), explicit mapping to international frameworks, and engagement with a wide range of stakeholders, from educators and clinicians to policymakers and patients (38). These elements strengthen the applicability of findings for informing EU-level policy.

Limitations were also common. Several studies suffered from small sample sizes (37), reliance on convenience or expert sampling (35), or descriptive approaches that precluded causal inference (36). Global analyses highlighted weak clustering of competencies across domains, reflecting the variability of available documents and frameworks (40). Additionally, the heterogeneity of European healthcare and education systems complicates cross-country comparability (31,33).

KNOWLEDGE GAPS AND FUTURE RESEARCH DIRECTIONS

This review identified several important gaps. First, while consensus on competencies is emerging, outcome-focused research on SN roles in Europe is scarce. Rigorous studies evaluating patient outcomes, cost-effectiveness, and workforce impact are urgently needed to strengthen the case for widespread role integration. Second, comparative studies across European countries would be valuable in examining how regulatory frameworks, scope of practice, and role recognition influence implementation success. Third, research on under-represented regions, such as Eastern Europe and parts of the Baltic states, would help to balance the predominantly Nordic- and Western European focus of current studies. Finally, further exploration of SN contributions to leadership, policy, and interprofessional collaboration would provide a more holistic understanding of their system-level impact.

CONCLUSION

This scoping review demonstrates that advanced practice and specialist nursing roles are steadily evolving across Europe, supported by strong educational foundations and a growing alignment with international competency frameworks. Evidence indicates that these roles make a measurable contribution to patient safety, accessibility, satisfaction, and potentially cost-effectiveness. Nonetheless, persistent variation in regulation, scope of practice, and role recognition continues to impede harmonisation and professional mobility. To fully realise the potential of specialist nurses in addressing current and future EU health priorities, sustained investment in policy development, legislative alignment, and outcome-based research will be essential.

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Appendix A: Search strategy (on 9th June 2024)

Database	CINAHL Ultimate
Key words	("Nurse Specialists" OR "Clinical Nurse Specialists" OR "Nurse Practitioners") AND ("Competency" OR "Competence") AND "Europe"
Results	9
Database	MEDLINE
Key words	("Nurse Specialists" OR "Clinical Nurse Specialists" OR "Nurse Practitioners") AND ("Competency" OR "Competence") AND "Europe"
Results	11
Database	PsychArticles
Key words	("Nurse Specialists" OR "Clinical Nurse Specialists" OR "Nurse Practitioners") AND ("Competency" OR "Competence") AND "Europe"
Results	0
Database	Web of Science
Key words	("Nurse Specialists" OR "Clinical Nurse Specialists" OR "Nurse Practitioners") AND ("Competency" OR "Competence") AND "Europe"
Results	4
Database	PubMed
Key words	("Nurse Specialists" OR "Clinical Nurse Specialists" OR "Nurse Practitioners") AND ("Competency" OR "Competence") AND "Europe"
Results	6
Database	Cochrane Library
Key words	("Nurse Specialists" OR "Clinical Nurse Specialists" OR "Nurse Practitioners") AND ("Competency" OR "Competence") AND "Europe"
Results	0