



# Identifying competencies in advanced healthcare practice: an umbrella review

Emily Kenyon<sup>1</sup> · Sarah DeBoer<sup>1</sup> · Rosy El-Khoury<sup>1</sup> · Denise La<sup>1</sup> · Brendan Saville<sup>1</sup> · Heather Gillis<sup>1</sup> · Greg Alcock<sup>1</sup> · Erin Miller<sup>1</sup> · Jackie Sadi<sup>1</sup>

Received: 21 March 2024 / Accepted: 2 June 2024  
© The Author(s), under exclusive licence to Springer Nature B.V. 2024

## Abstract

The four pillars of advanced healthcare practice (AHCP) are clinical practice, leadership and management, education, and research. It is unclear, however; how competencies of AHCP as defined by individual health professions relate to these pillars. Addressing this knowledge gap will help to facilitate the operationalization of AHCP as a concept and help inform educational curricula. To identify existing competencies across AHCP literature and examine how they relate to the four pillars of a multi-professional AHCP framework. An umbrella review was conducted in accordance with JBI methodology. The electronic search for published and grey literature was completed using CINAHL, Scopus, Medline (OVID), Embase (OVID), ERIC (OVID) and Google. Secondary reviews and research syntheses of master level AHCP programs published after 1990 in either English or French were considered for inclusion and results were analyzed using a directed content analysis. Seventeen publications detailing 620 individual competencies were included. AHCP competencies were described across four professions and 22 countries, with many publications related to nursing and AHCP in the United Kingdom, Canada, and Australia. Many retrieved competencies were found to map to the four pillars of AHCP, although clinical practice and leadership and management pillars were addressed more often. Competencies of AHCP are generally consistent with the four pillars. However, the distribution of competencies is unequal across pillars, professions, and geographical regions, which may provide direction for further research.

Doi: [10.17605/OSF.IO/KV2FD](https://doi.org/10.17605/OSF.IO/KV2FD) Published on March 07, 2023.

**Keywords** Advanced healthcare practice · Competencies · Healthcare education · Master degree

---

✉ Emily Kenyon  
ekenyon2@uwo.ca

<sup>1</sup> Advanced Health Care Practice Program – Faculty of Health Sciences, Western University, London, ON, Canada

## Introduction

The concept of advanced healthcare practice (AHCP) was first introduced in Western countries by the nursing profession in the 1960s (Hulse, 2022) to meet the needs of underserved rural populations better (Hibbert et al., 2017). Now firmly established as a key strategy in accommodating the increasing demands and complexity of patient populations (Lawler et al., 2020), AHCP has been linked to improved patient outcomes, facilitation of inter-professional practice and enhanced clinician work satisfaction (HEE, 2017; Hulse, 2022). These benefits have prompted healthcare professions outside of nursing to develop AHCP roles. Such roles have been labelled using various titles, including advanced practitioner, clinical specialist, advanced clinical practitioner, and clinicians with expanded scope, as well as by specific professional designations, such as Nurse Practitioner (Evans et al., 2020a, 2020b; Hulse, 2022; Leslie et al., 2021).

In 2017, Health Education England (HEE), a public body coordinating and supporting healthcare education and training, published a multi-professional framework for AHCP (HEE, 2017) that provided one of the first multi-profession definitions of AHCP. AHCP was defined as being:

... delivered by experienced, registered health and care practitioners. It is a level of practice characterized by a high degree of autonomy and complex decision-making. This is underpinned by a master level award or equivalent that encompasses the four pillars of clinical practice, leadership and management, education, and research, with demonstration of core capabilities and area of specific clinical competence. (HEE, 2017, pg. 8).

Among healthcare providers, competency has been defined as “an observable ability of a health professional, integrating multiple components, such as knowledge, skills, values and attitude” (Frank et al., 2010, pg. 641). While the terms competency and capability have been used interchangeably in relevant literature, in this review the term *competency* will be used to encompass the concept of core capabilities and skills. Competency is an integral concept in understanding competency-based education, proposed as an alternative to process-based education in the 1970’s. Seeking to ensure that graduates are adequately prepared to meet the needs of a given population, competency-based education considers the desired outcomes of training with a focus on both the needs of the learner and patient (Frank et al., 2010; Schumacher et al., 2024). Therefore, just as AHCP roles have emerged to meet population and healthcare needs, so too, has competency-based education (Frank et al., 2010; HEE, 2017). Assessment within competency-based education is guided by the attainment, maintenance, and enhancement of competencies as a measurement unit (Schumacher et al., 2024). This lends itself to assessment of learners at various levels of practice. To develop and implement defined AHCP roles, there must first be an overarching understanding of the competency of practice.

The development of HEE’s multi-professional framework was a critical step in promoting competency-based education for the implementation of AHCP. This framework is specific to England, yet multi-professional AHCP has not been clearly defined internationally (Evans et al., 2020a, 2020b; Lawler et al., 2020; Leslie et al., 2021). Furthermore, a recent scoping review examined the implementation of AHCP in the United Kingdom (UK) following the publication of the HEE framework and found that ongoing ambiguity in competency and educational requirements of AHCP has hindered its successful implementation (Evans et al., 2020a, 2020b). Similarly, a recent case study comparing scope of practice

policy and regulation in the UK, United States, Canada, and Australia found poor agreement on the education requirements, accreditation, and competency of those in relevant roles (Leslie et al., 2021). This lack of mutual understanding around AHCP competency has resulted in disagreements around roles, scope of practice, underutilization of skills sets and limited integration of AHCP roles in the workplace (Lawler et al., 2020; Leslie et al., 2021).

Although the concept of AHCP competency has been examined in both primary and secondary literature, current considerations are limited to single professions or specific roles, and little is known about competencies across AHCP and how these competencies relate to the four pillars outlined by the HEE framework (Leslie et al., 2021). Developing a broader understanding of existing competencies and whether they map to the four established pillars will continue to inform the development of competency-based educational curricula, enhance team-based care and contribute to health systems planning (Evans et al., 2020a, 2020b; Frank et al., 2010). Addressing this knowledge gap will help further support the operationalization of multi-profession AHCP and information to help inform AHCP educational curricula.

## Objectives

1. To determine which professions, have core competencies for graduates of AHCP degree-granting programs.
2. To identify competencies across AHCP.
3. To examine how identified competencies map to the four pillars of AHCP. (HEE, 2017).

## Methods and methodology

An umbrella review was conducted to provide an overview of existing systematic and secondary reviews (Aromataris et al., 2014a, b). Umbrella reviews offer the ability to broadly examine a topic of interest and determine if there is general consensus within the literature examining similar review questions (Aromataris et al., 2014a, b). The methodology for this review was based on the Joanna Briggs Institute (JBI) Manual for Evidence Synthesis (Aromataris et al., 2024). A study protocol was developed a priori and made available on Open Science Framework (Kenyon et al., 2022). Following the development of the protocol, changes were made to the wording of the review objectives to improve their clarity. A second quality appraisal tool was also identified and used to assess the methodological quality of the included reviews.

## Eligibility criteria

Inclusion and exclusion criteria were identified using the PEO Model (Aromataris & Munn, 2020) for clinical questions and can be found in Table 1.

## Search strategy

The search strategy was developed and executed in consultation with an Information and Research Librarian. This was conducted in three phases. In the first phase, initial key words

**Table 1** Inclusion and exclusion criteria for selected studies (Gavarkovs et al., 2022)

	Population	Exposure	Outcome	Studies
Inclusion	Regulated health-care professions. a final list of professions to be included was determined using the Canadian Regulated Health Professions Act as well as a list of regulated health professionals in the UK	University level degree granting programs	Intended or observed competencies, or skills of clinicians after the completion of Master's AHCP education or equivalent (post entry to practice degree)	Reviews and syntheses including systematic reviews, scoping reviews, meta-analyses, and integrative, narrative, and qualitative reviews
Exclusion	Health care professionals who are not regulated Students who have not yet achieved general registrar licensure	Programs that are not degree granting or that are intended for entry to practice		Reviews published in languages other than French and English Primary literature Studies published prior to 1990

were identified in a preliminary search using CINAHL and Google Scholar. Relevant keywords were then categorized for the Population, Exposure and Outcome model described by JBI (Aromataris & Munn, 2020). Search terms were entered into CINAHL, Scopus, Medline (OVID), Embase (OVID), and ERIC (OVID) using Boolean operators and truncation to ensure the search was adequately comprehensive. Any results not in English or French were excluded. A grey literature search was completed by entering the keywords identified in the preliminary search into an advanced Google search. The first two hundred returned results were screened for inclusion. Additionally, a hand search from personal files was conducted reviewing articles and their reference lists. The details of the final search are listed in Appendix A.

## **Study selection**

All yielded studies were exported to Mendeley for citation management and to Covidence (<https://www.covidence.org>) for citation screening and the removal of duplicates. The screening was completed by E.K., S.D., R.E., D.L., and B.S. and occurred in two steps: title and abstract screening followed by full-text review. Two independent reviewers chosen by Covidence conducted all screening based on the identified inclusion and exclusion criteria, with disagreements resolved by a third independent reviewer. Reasons for exclusion at full text stage were recorded.

## **Data extraction**

Data extraction from included studies was completed using a modified version of the JBI Extraction Form for Review for Systematic Reviews and Research Synthesis (Aromataris & Munn, 2020). As recommended, this tool was reviewed by the authors and amended by consensus before beginning data extraction (Aromataris & Munn, 2020). Amendments allowed for the addition of data extraction fields for target data as specified in the PEO Model. This included data fields to capture the profession a review pertained to, identified competencies and if reference was made to the HEE multi-professional framework. The amended version of this tool can be found in Appendix B. Consistent use of the tool was ensured by predetermining definitions for all data extraction fields and by piloting the tool using one randomly selected study from those included. Data extraction was completed in duplicate by two independent reviewers (S.D., R.E., E.K., D.L., B.S.) using Covidence. A third independent reviewer resolved conflicts.

## **Data analysis and synthesis**

Data was analyzed using directed content analysis; a deductive qualitative approach described by Mayring (2000). Using previously established research and theories to define categories and subcategories, the authors organized extracted data for analysis according to the steps outlined by Mayring (2000). HEE's four pillars of AHCP were used to define codes to which competencies retrieved from the literature were mapped. Findings were then summarized in a heat map indicating which HEE pillars and competencies were described within the retrieved reviews and their frequency. Abbreviated versions of the competencies listed in the HEE multi-professional framework have been used in the heat

map. These abbreviations had been previously established in the work of Fennelly et al. (2020) (Appendix C).

Mapping was completed by two independent reviewers (S.D., R.E., D.L., S.B.) with conflicts resolved by a third independent reviewer. Reviewers were permitted to assign multiple codes to a single competency. Consistency in coding was achieved by reviewing the use of codes between raters at three points during analysis: after 50 competencies had been coded, on completion of coding by independent reviewers and on completion of consensus (Mayring, 2000).

## Methodological quality appraisal

It was initially proposed that methodological quality of the included reviews would be appraised using the JBI (Joanna Briggs Institute) Critical Appraisal Checklist for Systematic Reviews and Research Syntheses (Aromataris et al., 2024). This tool consists of an 11-question checklist that prompts the user to select “yes,” “no,” “unclear,” or “not applicable,” as well as an overall appraisal rating of “include,” “exclude,” or “seek further info.” After study selection, most included reviews utilized qualitative study designs and presented their findings narratively rather than quantitatively. The Scale for the Assessment of Narrative Review Articles (SANRA) (Baethge et al., 2019) was identified to appraise narrative-type studies, defined as “any attempt to summarize the literature in a way which is not explicitly systematic, where the minimum requirement for the term systematic related to the method of the literature search” (Baethge et al., 2019). The SANRA is a 6-item scale that includes anchored definitions for each item. Each item is rated as a 0, 1 or a 2 with a total score < 4 indicating very poor quality (Baethge et al., 2019). Quality assessments using both the JBI checklist and SANRA were completed by two independent reviewers (S.D., R.E., D.L., S.B.), with conflicts being resolved by a third independent reviewer. Findings of the methodological quality appraisal were not used to determine inclusion, rather to provide comment on the overall quality of the included literature.

## Results

### Studies

The final search was completed between November 2022 and January 2023 with 3460 articles retrieved from databases. After removal of duplicates, 2102 articles underwent title and abstract screening and subsequently 97 underwent full-text screening. Following full text screening, 33 articles were excluded as they did not determine competencies, 21 articles were not secondary reviews or research syntheses, 19 did not examine master level or degree granting programs, 6 were published in languages other than English or French, 4 did not pertain to governed professions, and 1 full text was not available despite two attempts to contact the author. Three additional articles were identified from the grey literature. Seventeen reviews were included. A PRISMA diagram outlining study selection can be found in Fig. 1.

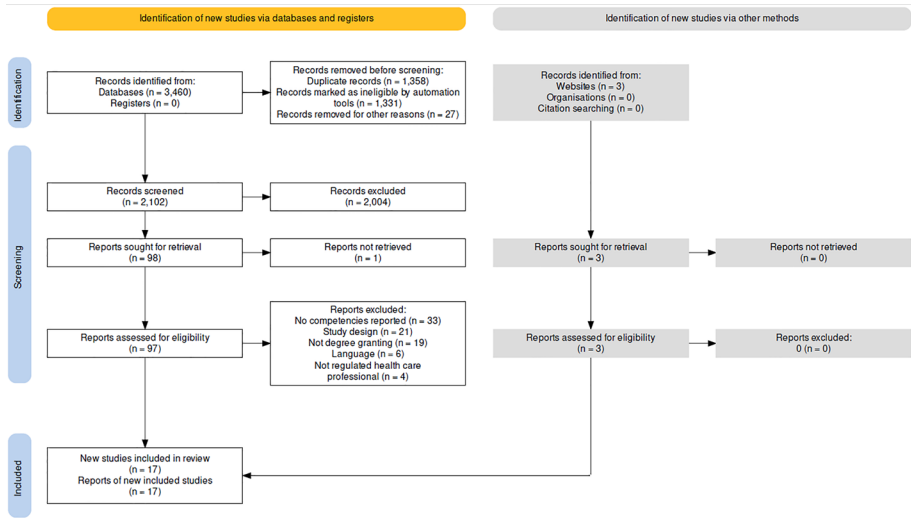


Fig. 1 PRISMA Diagram of AHCP Competencies (Haddaway et al., 2022)

### Characteristics of included reviews

Included reviews were published between 2004 and 2023 with countries of origin including the United States, the United Kingdom, Canada, Australia, the Netherlands, Switzerland, Germany, Spain, Singapore, Thailand, and China. One review was published in French. Nine reviews were literature reviews; four were scoping reviews, and two were integrative reviews in addition to both a single narrative review and a Ph.D. thesis. Of the included studies, 71% (n = 12/17) examined competencies of advanced practice nursing, while the remainder examined advanced practice physiotherapy (n = 3/17), midwifery (n = 1/17), and pharmacy (n = 1/17). Characteristics of all included reviews can be found in Table 2.

### Methodological quality

When methodological quality was evaluated using the JBI checklist, six studies met at least eight of the 11 criteria, five met at least six criteria and six met five or fewer criteria. When evaluated using the SANRA, 12 reviews scored nine or more, four scored at least five and one scored less than four. Those studies that met a higher number of criteria or scored higher are suggested to be of higher methodological quality. Quality appraisal suggests that, although the quality of the data was rated more favorably when using the SANRA compared to the JBI checklist, the quality of the data is moderate to high. The JBI tool commonly identified studies failing to critically appraise data and determine risk for publication bias, whereas the SANRA tool commonly identified studies failing to state specific research questions or adequately describe the search strategy. These findings reflect the differences in content validity of the two tools (Aromataris & Munn, 2020; Baethge et al., 2019; Sadoyu et al., 2022). Scoring of methodological quality can be found in Table 2.

**Table 2** Descriptive characteristics of included reviews

References	Purpose	Number of Included Studies	Studies Country of Origin	Pillar—number of codes	JBI Score	SANRA
Bender (2014)	Summarizing the broad and methodologically diverse clinical nurse leader	36	United States	Clinical practice—6 Leadership and Management—3 Education—2 Research—1 Other—1	4 (1 N/A)	5
Chan et al. (2020)	The purpose of this integrative literature review was to determine the critical elements of core Nurse Practitioner (NP) practice regardless of their population foci. A secondary aim was to then determine the extent to which there is alignment between NP practice activities and the current core competencies for NPs	17	United States	Clinical practice—10 Leadership and Management—5 Education—2 Research—3 Other—1	9	12
Chua et al. (2023)	This systematic review aims to consolidate and synthesize findings on the available evidence of using standardized patients on advanced practice nurse students' learning and assessment experiences	20	Singapore	Clinical practice—5 Leadership and Management—0 Education—0 Research—0 Other—1	10	12



**Table 2** (continued)

References	Purpose	Number of Included Studies	Studies	Country of Origin	Pillar—number of codes	JB1 Score	SANRA
Egerod et al. (2021)	Literature review describing skills and competencies required for advanced practice critical care nursing in Europe and to investigate related policy	42		United Kingdom, Belgium, Cyprus, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, Switzerland, Turkey	Clinical practice—9 Leadership and Management—4 Education—2 Research—1 Other—0	7 (3 N/A)	11
Elliott et al. (2015)	The purpose of this article is to describe the development of a professional practice model for advanced practice registered nurses	N/A		United States	Clinical practice—7 Leadership and Management—5 Education—4 Research—6 Other—1	3 (1 N/A)	3
Fennelly et al. (2020)	To review the existing international Advance Practice Physiotherapy (APP) competency frameworks and education curricula, and explore physiotherapist learning needs in a local context, with a view to informing the development and enhancement of MSK APP education curricula. Other profession	17		Ireland	Clinical practice—5 Leadership and Management—11 Education—7 Research—5 Other—0	8 (2 N/A)	11
Goemaes et al. (2016)	This concept analysis aims to clarify advanced midwifery practice and identify its components	96		United States Belgium	Clinical practice—2 Leadership and Management—1 Education—0 Research—1 Other—0	8 (2 N/A)	10

Table 2 (continued)

References	Purpose	Number of Included Studies	Studies Country of Origin	Pillar—number of codes	JB1 Score	SANRA
Goldberg et al. (2016)	This study aimed to establish an expert consensus on the role description and essential competencies for Advance Nurse Practitioners working with older people with frailty to develop a curriculum	N/A	United Kingdom	Clinical practice—9 Leadership and Management—4 Education—2 Research—0 Other—1	3 (3 N/A)	7
Harding et al. (2015)	Developing a clinical education framework that included an agreed competency standard and credentialing process to support advanced musculoskeletal physiotherapy roles	Not Specified	Australia	Clinical practice—7 Leadership and Management—5 Education—8 Research—3 Other—0	6	7
Heinen et al. (2019)	This review aims to identify and integrate leadership competencies of the master level-educated nurse from an international perspective	15	The Netherlands	Clinical practice—6 Leadership and Management—7 Education—4 Research—0 Other—0	9	10

**Table 2** (continued)

References	Purpose	Number of Included Studies	Studies Country of Origin	Pillar—number of codes	JBI Score	SANRA
Lea et al. (2005)	In this paper we identify innovative approaches to identifying genetics-related nursing roles and opportunities, as well as successful collaborative efforts beyond nursing to address the emerging health and societal challenges related to human genetics discoveries	N/A	United States	Clinical practice—7 Leadership and Management—0 Education—3 Research—0 Other—1	4	7
Meadows et al. (2004)	To develop and validate a competency framework that will define, in generalised terms, the competencies which pharmacists would be expected to demonstrate to be accredited for advanced level practice	50	United Kingdom	Clinical practice—9 Leadership and Management—6 Education—4 Research—5 Other—1	3	9

**Table 2** (continued)

References	Purpose	Number of Included Studies	Studies Country of Origin	Pillar—number of codes	JBI Score	SANRA
Poulin et al. (2021)	Set out requirements in terms of training and skills of clinical nurse specialist in geriatrics (CNSG); define the role of the CNSG in the emergency department; describe the contribution of the CNSG at the clinical and organizational level; to make recommendations regarding the implementation of this new role in the emergency department	17 articles + 4 grey literature	Canada	Clinical practice—10 Leadership and Management—5 Education—2 Research—3 Other—0	4 (1 N/A)	10
Sastre-Fullana (2014)	Identified common traits in advanced practice nursing that are specific to competency development worldwide	119 articles + 97 grey literature	Spain	Clinical practice—6 Leadership and Management—2 Education—3 Research—1 Other—0	6	11
Schlunegger et al. (2023)	To explore the existing literature related to nurse practitioner competencies in family practices and to examine the evidence and develop a list of competencies	23	Australia, Canada, New Zealand, Sweden, Switzerland, United Kingdom, United States, Germany	Clinical practice—8 Leadership and Management—6 Education—1 Research—0 Other—0	8 (1 N/A)	12

**Table 2** (continued)

References	Purpose	Number of Included Studies	Studies Country of Origin	Pillar—number of codes	JBI Score	SANRA
Tawath (2022)	Investigate the status of advanced practice physiotherapy within the global physiotherapy community, identify the currently available literature (published or grey) on advanced practice physiotherapy competencies, seek the opinion of stakeholders on the competencies, and validate the competencies for advanced practice physiotherapist	Not Specified	Canada	Clinical practice—10 Leadership and Management—2 Education—3 Research—3 Other—1	7	11
Xu et al. (2022)	The aim of this study is to develop a professional competence framework for Master Nurse Specialist programs in China and obtain a consensus on the framework among nursing experts	8	China	Clinical practice—9 Leadership and Management—4 Education—4 Research—5 Other—1	6	12

## Identified competencies based on profession

The included reviews identified 620 individual competencies. Most of the retrieved competencies were from nursing (62%,  $n = 387/620$ ) and physiotherapy studies (10%,  $n = 62/620$ ). The competencies retrieved from the pharmacy (5%,  $n = 33/620$ ) and midwifery (<1%,  $n = 4/620$ ) were limited in number, and each retrieved from a single review. Several of the reviews reported lists of competencies across multiple professions and geographical regions (Fennelly et al., 2020; Tawiah, 2022), but did not specify which professions or region each competency was sourced from. This accounted for 20% ( $n = 123/620$ ) of the retrieved competencies. Within nursing literature, a unique pattern was identified. Six of the studies examining AHCP nursing competencies cited consensus statements and policy documents published by national governing bodies, professional associations, and regulators (Bender, 2014; Chan et al., 2020; Egerod et al., 2021; Elliott & Walden, 2015; Fennelly et al., 2020; Heinen et al., 2019). These citations were not identified in studies from other professions.

## Data synthesis and analysis of the competencies

585 of the 620 retrieved competencies (94%) mapped to the four pillars. Thirty-five of the retrieved competencies were coded as other (6%), indicating that they did not map to the competencies.

A heat map of the retrieved competencies can be found in Fig. 2. Most retrieved competencies were found to map to the clinical practice pillar, accounting for 41% of all assigned codes. Leadership and management were the next most frequently represented pillar (27%),

Data analysis demonstrated that some competencies were described more frequently within the included reviews than others. The most mapped competencies were found within the Clinical Practice Pillar. The most frequently described competencies in order were “clinical reasoning and decision making,” “effective communication” and “assessment methods”. Within the Leadership & Management pillar the fourth overall highest competency was “negotiate scope of practice.” The fifth most common competency was “subject-specific competencies” which is also found within the clinical practice pillar. The competencies associated with the pillars of education (16%) and research (16%) were significantly less, with the combined number of competencies coded to both pillars being less than the number used for the clinical practice pillar alone.

## Discussion

### Professions that have defined core competencies of AHCP

This review determined that four professions have sought to determine competencies of degree granting AHCP programs. Many of the competencies retrieved by the search originated from nursing literature. This is not surprising as nursing was one of the first professions to establish an advanced practice role (Hulse, 2022). Within the included reviews, it became evident that the nursing profession has determined internationally accepted definitions of profession specific AHCP, and related competencies as well as expanded on their understanding of AHCP for specialized roles and practice settings, such as genetics (Lea et al., 2005), family practice (Schlunegger et al., 2023) and geriatric medicine (Goldberg



**Fig. 2** Heat map—Competencies in relation to advance practice pillars. \*Pillars and competencies coded most frequently are depicted in red while those coded least frequently are coded in green

et al., 2016). Given the successful establishment and implementation of AHCP nursing competencies, there may be key strategies for other professions that are working to establish and regulate advanced practice roles and educational programs.

Among reviews examining the nursing profession, there is evidence of cooperative and collaborative efforts among member organizations, professional associations, and regulatory groups to ensure consensus around capabilities, role definition, nomenclature and policy (Bender, 2014; Chan et al., 2020; Egerod et al., 2021; Elliott & Walden, 2015; Fennelly et al., 2020; Heinen et al., 2019). This comprehensive approach was not observed among reviews of other professions that have more recently begun to implement advanced

practice roles, such as physiotherapy (Fennelly et al., 2020; Harding et al., 2015; Tawiah, 2022), pharmacy and midwifery (Goemaes et al., 2016; Harding et al., 2015; Meadows et al., 2004). Unclear definitions of role, role awareness and disagreements around scope have been identified in the literature as barriers to successfully determining competencies and implementing AHCP (Evans et al., 2020a, 2020b; Lawler et al., 2020). Therefore, it appears that collaborative efforts between these stakeholders may be essential in determining core competencies and establishing and regulating educational programs.

## Competencies

The distribution of retrieved competencies under the pillars was not uniform. The most frequent competency for AHCP was found under the “Clinical Practice” pillar. It has been suggested that teachings of competencies related to clinical practice likely underpin skills of the other pillars, such as education and research (Utley et al., 2017). It must be considered that the findings of this review may highlight potential overlap between teachings of clinical reasoning and technical skills, as evidenced by “subject-specific competencies” being found to be the fifth most common competency. Retrieved competencies found to map to this competency included nurse practitioners’ assessment and management of geriatric populations (Fennelly et al., 2020). These represent competencies that are specific to professional roles and practice settings rather than those common to AHCP and were often discussed in the literature in a manner that did not make mention of competencies relating to the other pillars, such as education and research. This indicates that the current curriculum and evaluations of candidates in AHCP educational programs may focus on developing clinical skills to the exclusion of the competencies of the other three pillars. This is reflected in a cross-sectional survey of policymakers and clinicians at various levels of practice, which suggests that, although most clinicians consider the four pillars of AHCP important, knowledge of the HEE framework was minimal and competencies within the clinical practice pillar were consistently prioritized in their training (Fothergill et al., 2022).

To ensure that AHCP educational programs equip graduates to achieve the competency required to practice at the advanced level, curricula should consider mapping of program competencies across all four pillars. The development of such curricula, however, must also consider how to best ensure that candidates are proficient in the seamless application of multiple competencies in a holistic manner to manage complex and multi-faceted care environments. Therefore, although helpful in developing an overarching understanding of the current landscape of AHCP, consideration of competencies using only commonality may limit contextual understanding in an educational environment. This may be achieved in educational settings by considering the intention of the HEE multi-professional framework (2017) to be used alongside profession-specific national frameworks, such as that developed for AHCP nursing in England (HEE, 2020) to develop competency-based curricula. Using both frameworks allows for profession-specific competencies to be further defined while also ensuring that curricula map across pillars of AHCP, thus avoiding prioritization of only clinical skills.

## Alignment with the four pillars of AHCP

This review found that, although only four of the included reviews mentioned HEE’s multi-professional framework (2017), there was a strong alignment between the competencies



retrieved from the literature and the competencies of the four pillars of AHCP. Therefore, the findings of this review suggest that HEE's multi-professional framework describes the competencies common to AHCP both internationally and across professions. This suggests the potential of this framework to be considered as a guiding document for mapping educational curricula internationally to ensure alignment with advanced-level training requirements. (Fothergill et al., 2022). A small number of retrieved competencies (6%) did not map to the four pillars. Two themes were evident within these unmapped competencies: cultural sensitivity and business management skills. The finding of competencies that do not map to the existing framework suggests that future research may be warranted to determine if such competencies are integral to AHCP and to determine if existing frameworks may need to be reviewed and updated to ensure that they are contemporary and continue to reflect the needs of the dynamic healthcare systems.

### **Strengths and limitations**

This was the first large-scale international review of AHCP across professions and practice settings. This review utilized an umbrella review methodology, which permitted a systematic evaluation of the current body of literature and directions for future research. Screening and data analysis procedures were undertaken using two independent reviewers with a third to resolve conflicts, which along with the inclusion of a quality appraisal, strengthened the methodology of this review. This study has some potential limitations. The results of this review are limited to master and doctoral level educational programs and only captured data from professions which have examined AHCP with secondary research, therefore; results may not be inclusive of countries or professions with established or emerging advanced roles that are developed through experiential or diploma/certificate programs. Lastly, both the JBI checklist and SANRA lacked defined cut-off scores, limiting their ability to compare the methodological quality of the included studies (Sadoyu et al., 2022).

### **Future recommendations**

Further research is needed to determine the essential competencies of AHCP of professions and countries with newly established or emerging AHCP roles. Research with a focus on the development and assessment of competencies of leadership and management, education, and research is also needed as the current body of research focuses heavily on competencies related to the pillar of clinical practice (Evans et al., 2020a, 2020b; Fothergill et al., 2022). This may be achieved through the development of profession-specific national frameworks to be used in conjunction with the HEE multi-professional framework (HEE, 2017).

### **Conclusions**

The benefit of AHCP roles to patient outcomes and healthcare systems as a whole has been well substantiated in the literature (Evans et al., 2020a, 2020b; Evans et al., 2020a, 2020b; Fothergill et al., 2022; Hulse, 2022; Kleinpell et al., 2022), yet confusion remains regarding educational requirements, role delineation and the competency of those occupying AHCP roles (Evans et al., 2020a, 2020b; Lawler et al., 2020; Leslie et al., 2021). This review demonstrated that competencies of AHCP across different professions are consistent with the

four pillars of HEE's multi-professional framework (2017). The distribution of described competencies, however, is not equal across pillars, professions, or geographical regions, which may provide direction for further research. Therefore, the HEE multi-professional framework (HEE, 2017) may be useful as a guiding document in the design and evaluation of AHCP, although additional work is needed to establish profession-specific national frameworks and to ensure that competencies are developed across all four pillars.

## Appendix A: Search strategy for electronic databases

Concept	Key words
Population	Level of profession
	Health care professions
Exposure	University level degree granting program
Outcome	Core capabilities
Study type	Research syntheses

### Grey literature search terms

Advanced google search parameters	English	French
All these words	Competency	Compétence
This exact word or phrase	“systematic” OR “scoping” OR “Narrative” OR “meta-analysis” OR “integrative” OR “qualitative”	“Systématique” OR “Examen de la portée” OR “Étude de la portée” OR “Narrative” OR “Meta analyse” OR “Intégrative”
Any of these words	“Healthcare” OR “advanced practice” OR “scope”	“professionnel de la santé” OR “pratique avancée” OR “champ d’exercice” OR “domaines d’exercice”
Citations for sources identified for inclusion	<p>Tawiah, A. K. (2022). Developing a competency profile for international standardization of Advanced Practice Physiotherapy (PhD dissertation- 2022 · era.library.ualberta.ca)</p> <p>Health Education England. (2017). Multi-professional framework for advanced clinical practice in England. London: Health Education England</p> <p>Evans, C., Poku, B., Pearce, R., Eldridge, J., Hendrick, P., Knaggs, R., McLuskey, J., Tomczak, P., Thow, R., Harris, P. and Conway, J., (2020). Characterizing the evidence base for advanced clinical practice in the UK: a scoping review protocol. <i>BMJ open</i>, 10(5)</p>	

### Appendix B: Modified JBI data collection tool used for data extraction

Study details	Analysis	
Study title:	Method of analysis:	
Author/year:	Results	
Journal:	Were the HEE four pillars discussed?	Y/N Another category was used:
Study objective:	Competencies	Related HEE pillar (if referenced)
Year of data collection	1990–2000 2001–2010 2011–2020 2021-present	
	Level of education	Master PhD Other:

Study details		Analysis
Study title:		Method of analysis:
Study type	Literature review Narrative review Integrative review Scoping review Systematic review Umbrella review Other:	Significance/importance <i>Indicate which review questions were addressed by the findings of this study</i>
Country:	Canada UK Australia Other:	For which professions have competencies for AHCP been determined?
Healthcare profession	Nurse Physiotherapist Midwife Dentist Radiologist Respiratory Therapist Other:	What are the core competencies of degree granting AHCP programs?
Healthcare setting	Outpatient Inpatient Other:	Do the identified competencies align with HEE's four pillars of advanced clinical practice (i.e., clinical practice, leadership and management, education, and research)?
Search details		Authors recommendations <i>Please indicate and conclusion, implications for practice or areas for further research that the authors' have proposed</i>
Sources searched:		Final recommendation
Number of studies included:		Include
Types of studies included:		Exclude
Country of studies origin:		Additional comments

## Appendix C: Abbreviated competencies terms used to describe competencies of the four pillars of AHCP

Pillar of advance practice	Abbreviated Competencies as defined by Fen-nelly et al. (2020)	HEE Competency descriptions (Health Education England, 2017)
Clinical prac-tice	Professional conduct	1.1 Practice in compliance with their respective code of professional conduct and within their scope of practice, being responsible and accountable for their decisions, actions, and omissions at this level of practice
	Scope of practice	1.2 Demonstrate a critical understanding of their broadened level of responsibility and autonomy and the limits of own competence and professional scope of practice, including when working with complexity, risk, uncertainty and incomplete information
	Professional judgement	1.3 Act on professional judgement about when to seek help, demonstrating critical reflection on own practice, self-awareness, emotional intelligence, and openness to change
	Assessment methods	1.4 Work in partnership with individuals, families to provide assessments; requesting, undertaking and/or interpreting diagnostic tests; and conducting health needs assessments)
	Effective communication	1.5 Demonstrate effective communication skills, supporting people in making decisions, planning care or seeking to make positive changes, using Health Education England's framework to promote person-centered approaches in health and care
	Clinical reasoning and decision making	1.6 Use expertise and decision-making skills to inform clinical reasoning approaches when dealing with differentiated and undifferentiated individual presentations and complex situations, synthesizing information from multiple sources to make appropriate, evidence-based judgements and/or diagnoses
	Interventions	1.7 Initiate, evaluate and modify a range of interventions which may include prescribing medicines, therapies, lifestyle advice and care
	Managing risk	1.8 Exercise professional judgement to manage risk appropriately, especially where there may be complex and unpredictable events and supporting teams to do likewise to ensure safety of individuals, families and carers
	Working collaboratively	1.9 Work collaboratively with an appropriate range of multi-agency and inter-professional resources, developing, maintaining and evaluating links to manage risk and issues across organizations and settings
	Clinical role model	1.10 Act as a clinical role model/advocate for developing and delivering care that is responsive to changing requirements, informed by an understanding of local population health needs, agencies and networks
	Subject specific competencies	1.11 Evidence the underpinning subject-specific competencies i.e. knowledge, skills and behaviors relevant to the role setting and scope, and demonstrate application of the capabilities to these, in an approach that is appropriate to the individual role, setting and scope

Pillar of advance practice	Abbreviated Competencies as defined by Fennelly et al. (2020)	HEE Competency descriptions (Health Education England, 2017)
Leadership and management	Effective relationships	2.1 Pro-actively initiate and develop effective relationships, fostering clarity of roles within teams, to encourage productive working
	Person-centered approach	2.2 Role model the values of their organization/place of work, demonstrating a person-centered approach to service delivery and development
	Self and team evaluation	2.3 Evaluate own practice, and participate in multi-disciplinary service and team evaluation, demonstrating the impact of advanced clinical practice on service function and effectiveness, and quality (i.e. outcomes of care, experience and safety)
	Peer review	2.4 Actively engage in peer review to inform own and other's practice, formulating and implementing strategies to act on learning and make improvements
	Service development	2.5 Lead new practice and service redesign solutions in response to feedback, evaluation and need, working across boundaries and broadening sphere of influence
	Seek feedback and involvement	2.6 Actively seek feedback and involvement from individuals, families, carers, communities and colleagues in the co-production of service improvements
	Provide consultancy	2.7 Critically apply advanced clinical expertise in appropriate facilitatory ways to provide consultancy across professional and service boundaries, influencing clinical practice to enhance quality, reduce unwarranted variation and promote the sharing and adoption of best practice
	Leadership	2.8 Demonstrate team leadership, resilience and determination, managing situations that are unfamiliar, complex or unpredictable and seeking to build confidence in others
	Practice development	2.9 Continually develop practice in response to changing population health need, engaging in horizon scanning for future developments (e.g. impacts of genomics, new treatments and changing social challenges)
	Receptive to challenge	2.10 Demonstrate receptiveness to challenge and preparedness to constructively challenge others, escalating concerns that affect individuals', families', carers', communities' and colleagues' safety and well-being when necessary
	Negotiate scope of practice	2.11 Negotiate an individual scope of practice within legal, ethical, professional and organizational policies, governance and procedures, with a focus on managing risk and upholding safety

Pillar of advance practice	Abbreviated Competencies as defined by Fennelly et al. (2020)	HEE Competency descriptions (Health Education England, 2017)
Education	Assess own learning needs	3.1 Critically assess and address own learning needs, negotiating a personal development plan that reflects the breadth of ongoing professional development across the four pillars of advanced clinical practice
	Self-directed learning	3.2 Engage in self-directed learning, critically reflecting to maximize clinical skills and knowledge, as well as own potential to lead and develop both care and services
	Appraise others	3.3 Engage with, appraise and respond to individuals' motivation, development stage and capacity, working collaboratively to support health literacy and empower individuals to participate in decisions about their care and to maximize their health and well-being
	Advocacy	3.4 Advocate for and contribute to a culture of organizational learning to inspire future and existing staff
	Facilitate collaboration	3.5 Facilitate collaboration of the wider team and support peer review processes to identify individual and team learning
	Support team development	3.6 Identify further developmental needs for the individual and the wider team and supporting them to address these
	Support inter-professional learning	3.7 Supporting the wider team to build capacity and capability through work-based and interprofessional learning, and the application of learning to practice
	Educator/mentor	3.8 Act as a role model, educator, supervisor, coach and mentor, seeking to instill and develop the confidence of others
	Research	Engage in research
Evaluation and audits		4.2 Evaluate and audit own and others' clinical practice, selecting and applying valid, reliable methods, then acting on the findings
Use results to underpin practice		4.3 Critically appraise and synthesize the outcome of relevant research, evaluation and audit, using the results to underpin own practice and to inform that of others
Identify gaps in evidence		4.4 Take a critical approach to identify gaps in the evidence base and its application to practice, alerting appropriate individuals and organizations these and how they might be addressed in a safe and pragmatic way
Identify needs to strengthen evidence		4.5 Actively identify potential need for further research to strengthen evidence for best practice. This may involve acting as an educator, leader, innovator and contributor to research activity and/or seeking out and applying for research funding
Develop and implement governance		4.6 Develop and implement robust governance systems and systematic documentation processes, keeping the need for modifications under critical review
Dissemination		4.7 Disseminate best practice research findings and quality improvement projects through appropriate media and fora (e.g. presentations and peer review research publications)
Facilitate links between clinic and research		4.8 Facilitate collaborative links between clinical practice and research through proactive engagement, networking with academic, clinical and other active researchers

**Acknowledgements** The authors would like to acknowledge Meagan Stanley, Information and Research Librarian at Western University for her assistance in the development and execution of a search strategy.

**Authors Contributions** The authors confirm contribution to the paper as follows: study conception J.S., H.G., G.A.; study design J.S., E.M., E.K., S.D., R.E., D.L., B.S.; data collection, analysis and interpretations of results E.K., S.D., R.E., D.L., B.S.; draft manuscript preparation E.K., S.D., R.E., D.L., B.S., J.S., H.G., G.A., E.M. All authors reviewed the results and approved the final version of the manuscript.

**Funding** The authors have no funding sources to declare.

## Declarations

**Conflict of interest** The authors declare that they have no competing interests.

## References

- Aromataris, E., Fernandez, R. S., Godfrey, C., Holly, C., & Khalil, H. (2014). Methodology for JBI umbrella reviews. <https://ro.uow.edu.au/smhpapers/3344>
- Aromataris, E., Fernandez, R. S., Godfrey, C., Holly, C., Khalil, H., & Tungpunkom, P. (2014). Methodology for JBI umbrella reviews. Faculty of Science, Medicine and Health -Papers: Part A. 3344. <https://ro.uow.edu.au/smhpapers/3344> (20) (PDF) Chapter 10: Umbrella Reviews.: [https://www.researchgate.net/publication/342598533\\_Chapter\\_10\\_Umbrella\\_Reviews](https://www.researchgate.net/publication/342598533_Chapter_10_Umbrella_Reviews)
- Aromataris, E., Lockwood, C., Porritt, K., Pilla, B., Jordan, Z., (eds.), (2024). JBI manual for evidence synthesis. *JBI* <https://doi.org/10.46658/JBIMES-24-01>
- Aromataris, E., & Munn, Z. (2020). JBI Manual for Evidence Synthesis. *JBI*. <https://doi.org/10.46658/JBIMES-20-01>
- Baethge, C., Goldbeck-Wood, S., & Mertens, S. (2019). SANRA—a scale for the quality assessment of narrative review articles. *Research Integrity and Peer Review*, 4(1), 5. <https://doi.org/10.1186/s41073-019-0064-8>
- Bender, M. (2014). The current evidence base for the clinical nurse leader: A narrative review of the literature. *Journal of Professional Nursing*, 30(2), 110–123. <https://doi.org/10.1016/j.profnurs.2013.08.006>
- Chan, T. E., Lockhart, J. S., Thomas, A., Kronk, R., & Schreiber, J. B. (2020). An integrative review of nurse practitioner practice and its relationship to the core competencies. *Journal of Professional Nursing*, 36(4), 189–199. <https://doi.org/10.1016/j.profnurs.2019.11.003>
- Chua, C. M. S., Nantsupawat, A., Wichaiikum, O. A., & Shorey, S. (2023). Content and characteristics of evidence in the use of standardized patients for advanced practice nurses: A mixed-studies systematic review. *Nurse Education Today*, 120, 105621. <https://doi.org/10.1016/j.nedt.2022.105621>
- Egerod, I., Kaldan, G., Nordentoft, S., Larsen, A., Herling, S. F., Thomsen, T., & Endacott, R. (2021). Skills, competencies, and policies for advanced practice critical care nursing in Europe: A scoping review. *Nurse Education in Practice*, 54, 103142. <https://doi.org/10.1016/j.nepr.2021.103142>
- Elliott, E. C., & Walden, M. (2015). Development of the transformational advanced professional practice model. *Journal of the American Association of Nurse Practitioners*, 27(9), 479–487. <https://doi.org/10.1002/2327-6924.12171>
- Evans, C., Pearce, R., Greaves, S., & Blake, H. (2020a). Advanced clinical practitioners in primary care in the UK: A qualitative study of workforce transformation. *International Journal of Environmental Research and Public Health*, 17(12), 4500. <https://doi.org/10.3390/ijerph17124500>
- Evans, C., Poku, B., Pearce, R., Eldridge, J., Hendrick, P., Knaggs, R., McLuskey, J., Tomczak, P., Thow, R., Harris, P., Conway, J., & Collier, R. (2020b). Characterising the evidence base for advanced clinical practice in the UK: A scoping review protocol. *British Medical Journal Open*, 10(5), e036192. <https://doi.org/10.1136/bmjopen-2019-036192>
- Fennelly, O., Desmeules, F., O'Sullivan, C., Heneghan, N. R., & Cunningham, C. (2020). Advanced musculoskeletal physiotherapy practice: Informing education curricula. *Musculoskeletal Science and Practice*, 48, 102174. <https://doi.org/10.1016/j.msksp.2020.102174>
- Fothergill, L. J., Al-Oraibi, A., Houdmont, J., Conway, J., Evans, C., Timmons, S., Pearce, R., & Blake, H. (2022). Nationwide evaluation of the advanced clinical practitioner role in England: A cross-sectional survey. *British Medical Journal Open*, 12(1), e055475. <https://doi.org/10.1136/bmjopen-2021-055475>
- Frank, J. R., Snell, L. S., Cate, O. T., Holmboe, E. S., Carraccio, C., Swing, S. R., Harris, P., Glasgow, N. J., Campbell, C., Dath, D., Harden, R. M., Iobst, W., Long, D. M., Mungroo, R., Richardson, D. L.,



- Sherbino, J., Silver, I., Taber, S., Talbot, M., & Harris, K. A. (2010). Competency-based medical education: Theory to practice. *Medical Teacher*, 32(8), 638–645. <https://doi.org/10.3109/0142159X.2010.501190>
- Gavarkovs, A., Kusurkar, R. A., Kulasegaram, K., Crukley, J., Miller, E., Anderson, M., & Brydges, R. (2022). Motivational design for web-based instruction in health professions education: Protocol for a systematic review and directed content analysis. *JMIR Research Protocols*, 11(11), e42681. <https://doi.org/10.2196/42681>
- Goemaes, R., Beeckman, D., Goossens, J., Shawe, J., Verhaeghe, S., & Van Hecke, A. (2016). Advanced midwifery practice: An evolutionary concept analysis. *Midwifery*, 42, 29–37. <https://doi.org/10.1016/j.midw.2016.09.004>
- Goldberg, S. E., Cooper, J., Blundell, A., Gordon, A. L., Masud, T., & Moorchilot, R. (2016). Development of a curriculum for advanced nurse practitioners working with older people with frailty in the acute hospital through a modified Delphi process. *Age and Ageing*, 45(1), 48–53. <https://doi.org/10.1093/ageing/afv178>
- Haddaway, N. R., Page, M. J., Pritchard, C. C., & McGuinness, L. A. (2022). PRISMA2020: An R package and Shiny app for producing PRISMA 2020-compliant flow diagrams, with interactivity for optimised digital transparency and Open Synthesis. *Campbell Systematic Reviews*, 18, 1230. <https://doi.org/10.1002/cl2.1230>
- Harding, P., Prescott, J., Sayer, J., & Pearce, A. (2015). Advanced musculoskeletal physiotherapy clinical education framework supporting an emerging new workforce. *Australian Health Review*, 39(3), 271. <https://doi.org/10.1071/AH14208>
- Health Education England. (2017). *Multi-professional framework for advanced clinical practice in England*. <http://www.aomrc.org.uk/wp-content/>
- Health Education England. (2020). *Core Capabilities Framework for Advanced Clinical Practice (Nurses) Working in General Practice/Primary Care in England*.
- Heinen, M., Oostveen, C., Peters, J., Vermeulen, H., & Huis, A. (2019). An integrative review of leadership competencies and attributes in advanced nursing practice. *Journal of Advanced Nursing*, 75(11), 2378–2392. <https://doi.org/10.1111/jan.14092>
- Hibbert, D., Aboshaiqah, A. E., Sienko, K. A., Forestell, D., Harb, A. W., Yousuf, S. A., Kelley, P. W., Brennan, P. F., Serrant, L., & Leary, A. (2017). Advancing nursing practice: The emergence of the role of advanced practice nurse in Saudi Arabia. *Annals of Saudi Medicine*, 37(1), 72–78. <https://doi.org/10.5144/0256-4947.2017.72>
- Hulse, A. L. (2022). A multidisciplinary learning approach: A narrative review. *British Journal of Nursing*, 31(7), 364–370. <https://doi.org/10.12968/bjon.2022.31.7.364>
- Kenyon, E., DeBoer, S., El-Khoury, R., La, D., Saville Brendan, Alcock, G., Gillis, H., Miller, E., & Sadi, J. (2022). Identifying Common Competencies for Advanced Healthcare Practice Programs: An Umbrella Review Protocol [Internet]. OSF; 2023. Available from: [osf.io/kv2fd](https://doi.org/10.17605/OSF.IO/KV2FD). *Open Science Framework*. <https://doi.org/10.17605/OSF.IO/KV2FD>
- Kleinpell, R., Myers, C. R., Likes, W., & Schorn, M. N. (2022). Breaking down institutional barriers to advanced practice registered nurse practice. *Nursing Administration Quarterly*, 46(2), 137–143. <https://doi.org/10.1097/NAQ.0000000000000518>
- Lawler, J., MacLaine, K., & Leary, A. (2020). Workforce experience of the implementation of an advanced clinical practice framework in England: A mixed methods evaluation. *Human Resources for Health*, 18(1), 96. <https://doi.org/10.1186/s12960-020-00539-y>
- Lea, D. H., Cooksey, J. A., Flanagan, P. A., Williams, J. K., & Forte, G. (2005). Innovations in United States genetics nursing: Practice and research. *Japan Journal of Nursing Science*, 2(2), 71–83. <https://doi.org/10.1111/j.1742-7924.2005.00043.x>
- Leslie, K., Moore, J., Robertson, C., Bilton, D., Hirschhorn, K., Langelier, M. H., & Bourgeault, I. L. (2021). Regulating health professional scopes of practice: Comparing institutional arrangements and approaches in the US, Canada, Australia and the UK. *Human Resources for Health*, 19(1), 15. <https://doi.org/10.1186/s12960-020-00550-3>
- Mayring, P. (2000). *Qualitative content analysis*. <http://www.zuma-mannheim.de/research/en/methods/textanalysis/>
- Meadows, N., Davies, G., Webb, D., Bates, I., McRobbie, D., & Sotiris, A. (2004). Developing a competency framework for advanced pharmacy practitioners. *Pharmaceutical Journal*, 273(7327), 789–792.
- Poulin, V., Mailhot-Bisson, D., & Turcotte-Brousseau, A. A. (2021). Le déploiement du rôle d'une infirmière en pratique avancée en gériatrie à l'urgence: Une innovation en Estrie. *Soins D'urgence*, 2(2), 35–44. <https://doi.org/10.7202/1101813ar>
- Sadoyu, S., Tanni, K. A., Punrum, N., Paengtrai, S., Kategaew, W., Promchit, N., Lai, N. M., Thakkinstian, A., Ngorsuraches, S., Bangpan, M., Veettil, S., & Chaiyakunapruk, N. (2022). Methodological

- approaches for assessing certainty of the evidence in umbrella reviews: A scoping review. In *PLoS ONE* (Vol. 17, Issue 6 June). Public Library of Science. <https://doi.org/10.1371/journal.pone.0269009>
- Sastre-Fullana, P., De Pedro-Gómez, J. E., Bennasar-Veny, M., Serrano-Gallardo, P., & Morales-Asencio, J. M. (2014). APN competency frameworks review. *International Nursing Review*, *61*, 534–542. <https://doi.org/10.1111/inr.12132>
- Schlunegger, M. C., Aeschlimann, S., Palm, R., & Zumstein-Shaha, M. (2023). Competencies of nurse practitioners in family practices: A scoping review. *Journal of Clinical Nursing*, *32*(11–12), 2521–2532. <https://doi.org/10.1111/jocn.16382>
- Schumacher, D. J., Kinnear, B., Carraccio, C., Holmboe, E., Busari, J. O., van der Vleuten, C., & Lingard, L. (2024). Competency-based medical education: The spark to ignite healthcare's escape fire. *Medical Teacher*, *46*(1), 140–146. <https://doi.org/10.1080/0142159X.2023.2232097>
- Tawiah, A. K. (2022). *Developing a competency profile for international standardization of Advanced Practice Physiotherapy*. PhD dissertation (2022 era.library.ualberta.ca) <https://doi.org/10.7939/r3-0xnv-gz42>
- Utley, R., Henry, K., & Smith, L. (2017). *Frameworks for advanced nursing practice and research: Philosophies, theories, models and taxonomies*. Springer Publishing Company.
- Xu, H., Dong, C., Yang, Y., & Sun, H. (2022). Developing a professional competence framework for the master of nursing specialist degree program in China: A modified Delphi study. *Nurse Education Today*, *118*, 105524. <https://doi.org/10.1016/j.nedt.2022.105524>

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.