Development of a competency framework for advanced practice nurses : a co-design process

DEVELOPMENT OF A COMPETENCY FRAMEWORK FOR ADVANCED PRACTICE NURSES: A CO-DESIGN PROCESS

ABSTRACT

Aims: To develop a comprehensive competency framework for advanced practice nurses in Belgium.

Design: A co-design development process was conducted.

Methods: This study consisted of two consecutive stages (November 2020-December 2021): (1) developing a competency framework for advanced practice nurses in Belgium by the research team, based on literature and (2) group discussions or interviews with and written feedback from key stakeholders. Eleven group discussions and seven individual interviews were conducted with various stakeholder groups with a total of 117 participants.

Results: A comprehensive competency framework containing 31 key competencies and 120 enabling competencies was developed based on the Canadian Medical Education Directions for Specialists Competency Framework. These competencies were grouped into seven roles: clinical expert and therapist, organizer of quality care and leader in innovation, professional and clinical leader, collaborator, researcher, communicator, and health promoter.

Conclusion: The developed competency framework has resemblance to other international frameworks. This framework emphasized the independent role of the advanced practice nurse and provided guidance in a clear task division and delegation to other professionals. It can provide a solid foundation for delivering high-quality, patient-centred care by advanced practice nurses in the years to come.

Implications for the profession: This competency framework can guide further development of advanced practice nursing education in Belgium and represents a starting point for future evaluation of its feasibility and usability in education and clinical practice. Advanced practice nurses and healthcare managers can also use the framework as an instrument for personal and professional development, performance appraisal, and further alignment of these function profiles in clinical practice. Finally, this framework can inform and guide policymakers towards legal recognition of advanced practice nursing in Belgium and inspire the development of advanced practice nursing profiles in countries where these profiles are still emerging.

Impact

What problem did the study address?

- The absence of a detailed competency framework for advanced practice nurses complicates legal recognition, role clarification and implementation in clinical practice in Belgium.
- A rigorously developed competency framework could clarify which competencies should be aimed at in future advanced practice nursing education, training, mentorship programs and implementation in practice.

What were the main findings?

- The competency framework outlined seven roles for advanced practice nurses: clinical expert and therapist, organizer of quality care and leader in innovation, professional and clinical leader, collaborator, researcher, communicator, and health promoter.

- Differentiation from other expert nursing profiles and clinical autonomy of advanced practice nurses were the pivotal topics being discussed by key stakeholders.

Where and on whom will the research have impact?

- The comprehensive competency framework for advanced practice nurses and the collaborative methodology used can inspire the development of advanced practice nursing profiles in countries where these profiles are still emerging.
- The competency framework can be used as an instrument for role clarification, performance appraisals, continuous professional development, professional (e-)portfolios and can guide policymakers when establishing Belgian's legal framework for advanced practice nurses.

Reporting method: The authors have adhered to CONFERD-HP: recommendations for reporting COmpeteNcy FramEwoRk Development in health professions

Patient or Public Contribution: No patient or public contribution in the design of the study. A patient advisory panel commented on the developed competency framework.

Keywords: Advanced Practice Nursing, Clinical Nurse Specialist, Nurse Practitioner, competency framework, education, professional development, co-design, stakeholder, nursing

What does this paper contribute to the wider global clinical community?

- The competency framework can be used as an instrument for role clarification, performance appraisals, continuous professional development, and professional (e-)portfolios.

- The developed competency framework can provide guidance in a clear task division and delegation towards other professionals.

INTRODUCTION

Advanced Practice Nurses (APNs) are increasingly becoming part of healthcare professional teams in a variety of healthcare settings worldwide (Ranchal et al., 2015). Legal recognition of the APN function is an essential precondition for establishing this function (Hamric, Hanson, Tracy, & O'Grady, 2014). Hence, the initiated legal framework with title protection for APNs in Belgium in 2019 was an important breakthrough for advanced practice nursing and the healthcare system (Van Hecke et al., 2020). However, as stipulated by Van Hecke et al. (2020), multiple elements in this legal framework remain unclear. Furthermore, the educational curriculum for APNs in Belgium is currently being revised. Developing a competency framework could clarify which competencies should be aimed at in future advanced practice nursing education and for implementation in clinical practice.

Background

The emergence of APNs originated in the USA during the American Civil War and the first APNs were employed in the field of anesthetics (Hamric et al., 2014). However, since the beginning of the 21st century, the healthcare evolution has created a need for nursing competencies at an advanced level, which led to the progressive spread of APNs internationally (Ranchal et al., 2015). Healthcare systems face several challenges including the increased incidence of chronic conditions associated with complex care needs, which call for new roles and functions (Kluge, 2022). Furthermore, the emerging technological innovations, the fast and exponential growth in scientific research, and the associated importance of evidence-based/informed care require advanced nursing profiles. In addition, healthcare systems worldwide face a shortage of healthcare professionals such as physicians (Laurant et al., 2018) and nurses (Scheffler & Arnold, 2019).

The International Council of Nurses (ICN) defines APN as follows: *"An Advanced Practice Nurse is a generalist or specialized nurse who has acquired, through additional graduate education (minimum of a master's degree), the expert knowledge base, complex decision-making skills and clinical competencies for Advanced Nursing Practice, the characteristics of which are shaped by the context in which they are credentialed to practice"* (ICN, 2020). This definition includes both the Clinical Nurse Specialist (CNS) and the Nurse Practitioner (NP) profile, which are most commonly described internationally (Kaldan et al., 2019). According to the Belgian Association of Advanced Practice Nurses (Belgische Vereniging voor Verpleegkundig Specialisten i.e. BVVS - BVVS, 2018) and also defined in other advisory reports (Universitaire Denktank, 2020, Federale Raad voor Verpleegkunde, 2018), the Belgian APN has to have obtained a Master of Science in Nursing, operating in an expert nursing profile within a specialization that meets the characteristics of the advanced practice nursing concept as described by Hamric and colleagues in 2014. More specifically, Hamric et al. (2014) described APNs through seven key competencies, i.e. direct clinical practice, guidance and coaching, consultation, evidence-based practice, leadership, collaboration, and ethical decision-making.

In April 2019, the profile of APNs was added to the Belgian's list of healthcare professions (Law of 22 April 2019 amending the coordinated Law of 10 May 2015 on the practice of healthcare professions - Belgisch Staatsblad 2019). This legal recognition was a first step to a potential breakthrough. However, the legal framework does not yet address how do APNs distinguish themselves from other expert nursing profiles, i.e, nurses at specialized level (Federale Raad voor Verpleegkunde, 2017), what the APN scope of practice is (e.g. which clinical and medical interventions can be performed by an APN and with which level of autonomy), and which

competencies should APNs obtain to gain formal recognition and title validation (Van Hecke et al., 2020).

A competency framework would provide such clarification. Competency(ies) refer(s) to the abilities of persons to integrate knowledge, skills and attitudes in their performance of tasks within a given context. Competencies are durable, trainable and, through the expression of behaviors, measurable (WHO, 2022, Jonnaert et al., 2009). Outside North-America, few competency descriptions for APNs are available and little knowledge exists on research-driven efforts to develop key competencies for APNs (Jokiniemi, Meretoja, & Pietilä, 2018). One of the most recognized and widely applied competency frameworks at international level is the Canadian Medical Education Directives for Specialists (CanMEDS) Framework (Frank et al., 2015). This framework was initially developed for physicians but can be adapted and used for other healthcare professionals (Frank et al., 2015). The competency framework consists of seven roles, more specifically clinical expert, communicator, collaborator, leader, health advocate, scholar, and professional. Within each CanMEDS role, a defined number of essential abilities, also labelled as key competencies is listed. The key competencies refer to the knowledge, skills and attitudes of a physician and are described as global educational statements. Each key competency has different enabling competencies describing the components of each respective key competency in detail (Frank et al., 2015).

Currently, no detailed and comprehensive competency framework for APNs does exist in Belgium, which complicates efforts toward legal recognition, implementation in clinical practice and the design of uniform education, training and mentorship programs. As such, the development of a competency framework for APNs in Belgium is pivotal in providing APN education, taking into account the Belgian healthcare context. International APN competency frameworks often make a

distinction between CNS and NP competency frameworks. In Belgium, the title of CNS and NP profiles is legally integrated in one APN function in 2019. Therefore, an integrated APN competency framework taking the integration of the two profiles into account is needed. A Belgian context specific APN competency framework could also make a clear distinction with other existing expert nursing profiles in Belgium (e.g., specialized nurses). An APN competency framework that is tailored to the Belgian context can serve as an instrument for enhancing the practice readiness of graduates and ensuring that they graduate with the competencies necessary for learning throughout their professional careers (Frank et al., 2015). Furthermore, such a framework will allow for role clarification, performance appraisals and coaching trajectories in nurses currently working as APNs. In addition, human resources managers in healthcare institutions can use this framework to design job profiles and the level of expertise and competency for salary when implementing new APN functions within their healthcare organization. The framework could also inform and guide policymakers when establishing Belgian's legal APN framework. Finally, it could provide a useful resource for other countries seeking to adopt a competency framework that is adapted to their own context of care.

THE STUDY

Aim

This study aimed to develop with key stakeholders a competency framework for advanced practice nursing in the Belgian context.

A co-design process or collaborative methodology was used for the development of the competency framework for APNs in Belgium. We followed a consecutive two-stage process

(November 2020-December 2021). First, a conceptual competency framework was drafted, by the research team, based on available literature and current APN practice activities in a Belgian healthcare context. Second, discussions with various key stakeholder groups were held, resulting in iterative modifications of the included competencies.

Stage 1. Drafting of the competency framework

The research team, which performed the literature search and drafted the competency framework, consisted of eight representatives of four Flemish (Dutch language) universities offering a Master of Science in Nursing program for APNs, three representatives of the Belgian Association of APNs, and an expert in competency framework building (including CanMEDS).

The CanMEDS framework served as a backbone for the development of the competency framework for APNs because of its common~~ly~~ use~~d~~ in Belgian curricula of healthcare professionals (Universitaire Denktank 2020, Hawkins et al., 2015; Michiels et al., 2012). Two researchers (AVH, NJ) independently established an inventory of existing competencies related to the different APN roles using a literature search. The search string consisted of key concepts and their synonyms (i.e., advanced practice nursing, clinical nurse specialist, nurse practitioner, competency, framework, portfolio, function profile) which were combined using the Boolean operators OR/AND. Pubmed, Embase, Web of Science, and CINAHL were searched up to December 2020. Well-known reports regarding APN (e.g., ICN, 2020) and APN frameworks or APN profile descriptions known by the research teams or their network were consulted as grey-literature (e.g., V&VN 2019, ESNO 2015). Screening of relevant literature was performed by two researchers (AVH, NJ). Publications were included if they described competencies related to

different APN roles. In case of doubt, the two researchers reached consensus through a thorough discussion. The following literature informed the drafting of the competency framework: (1) the APN profile as described by the Belgian Association of APNs (Belgische Vereniging voor Verpleegkundig Specialisten, 2018), (2) the APN profile as described by the Federal Council of Nurses (Federale Raad voor Verpleegkunde, 2018), (3) the APNs competency framework for the Netherlands (V&VN 2019), (4) the APN Competency Framework published by the International Council of Nurses (ICN, 2020), and (5) additional international references on competencies for APNs (Jokiniemi et al., 2021, Heinen et al., 2019, Sastre-Fullana et al.2014, Baldwin et al., 2009).

Firstly, one researcher (NJ) extracted the competencies from the included documents in a matrix structure using Microsoft Excel® and linked them to the respective CanMEDS roles. A second researcher (AVH) checked this extraction. Secondly, the two researchers had several discussions (online/face to face) with an expert in the development of a CanMEDS competency framework (ME) to discuss the adequacy of the linkage between competencies and the respective CanMEDS role. In addition, the competencies within the CanMEDS roles were labelled as either key competencies or enabling competencies by the three researchers which helped to visualize overlap and gaps. Furthermore, several online in-depth discussions with the full research team (comprising members with substantive expertise concerning APNs in Belgium and expertise in competency building) were held to reflect on the formulated CanMEDS roles, and on the key and enabling competencies for APNs. These discussions were recorded and transcribed verbatim. Based on these discussions the draft competency framework was revised based on consensus.

The research team drafted a contextualized APN competency framework with seven CanMEDS-inspired roles, 26 key competencies, and 132 enabling competencies (See Table 1). The research team considered it appropriate to adapt some of the original CanMEDS roles to enhance

differentiation with current expert nursing profiles in the Belgian context (Federale Raad voor Verpleegkunde, 2017) and to align with the law concerning the execution of healthcare professions (Law of 22 April 2019 amending the coordinated Law of 10 May 2015 on the practice of healthcare professions - Belgisch Staatsblad 2019). The original CanMEDS 'medical expert' role was changed into 'clinical expert and therapist', the 'leader' role was changed into 'organizer of quality care', the 'professional' role was changed into 'professional and clinical leader', and the 'scholar' role was changed into 'researcher'. In line with the CanMEDS framework and the recommendations of Hamric et al. 2014, the adapted role of 'clinical expert and therapist' was also considered as the central role surrounded by the six other roles.

PLEASE INSERT TABLE 1 ABOUT HERE

Stage 2. Discussion with key stakeholders

Sample

In stage 2, discussions with various key stakeholder groups were held. The researchers contacted key stakeholders via e-mail and also e-mail invitations from professional nursing organizations. The research team engaged a heterogeneous group of key stakeholders to ensure that the ~~new~~ APN framework was comprehensive and practical. The following key stakeholders were invited:

- Nurses currently working in APN profiles to whom the competency framework should apply: diversity in the types of APNs to be included was sought, as Belgian APNs work in different healthcare settings and contexts (e.g. hospitals or mental health care) and within different specialization domains.

- Board and members of the Belgian Association of APNs (not involved in the drafting of the competency framework).
- Physicians, as physician support is crucial when implementing and collaborating with APN functions (Hurlock-Chorostecki, Forchuk, Orchard, Reeves, & van Soeren, 2013).
- Members of the Consortia of Universities and University colleges providing the APN master training in the French-speaking part of Belgium.
- Representatives and lecturers of university colleges to ensure clear differentiation with other specialized nursing programs.
- Members of the General Association of Belgian Nurses, a cupola organization of all nursing associations in Belgium.
- Nursing managers and representatives of different healthcare organizations.
- A patient advisory board of an academic hospital.

Data collection

In general, separated synchronous group discussions were held using MS Teams®. As the interaction between participants was critical to create a widely supported competency framework, group discussions were considered appropriate to obtain rich data (Holloway & Galvin, 2016). Participants within the same stakeholder group were invited to ensure more similar knowledge related to the topic and to avoid power-balance issues (e.g., nurses versus physicians or managers, universities versus university colleges). The group discussions were co-moderated by AVH, who is experienced in focus group interviews, and NJ. To support interaction, clear expectations and instructions about the use of the platform and turn-taking were provided before starting the

discussion. Instant messaging or hand raising by the participants was encouraged. Using open-ended questions, probing for elaboration, and, if needed, sometimes redirecting the discussion to quieter participants to facilitate everyone's input were used. If participants were not able to attend the group discussion but expressed an interest to be involved, an individual interview was scheduled or they were invited to electronically comment on the framework. In addition, participants of a French-speaking nursing scholars' platform who organized a symposium on APNs (consisting of members of the Consortia of Universities and Universities of Applied Sciences providing the APN training, representatives and lecturers of university colleges, APNs) were invited to give written comments on the drafted competency framework. Prior to the group discussions, individual interviews, and the symposium, the drafted competency framework was sent by e-mail with instructions to read the document in advance.

In total, eleven group discussions and seven individual interviews were conducted. Due to the COVID-19 pandemic and practical considerations, discussions and interviews were held online, except for the discussion with the patient advisory board. The number of participants in the discussions varied between three and 20. All group discussions and individual interviews were recorded. The duration of the discussions and individual interviews ranged between 24 and 96 minutes.

Group discussions and interviews began by exploring participants' initial impressions of the draft framework. Furthermore, we delved into their recognition of anticipated APN practices, assessed competency gaps, examined the framework's effectiveness in distinguishing APNs from other nursing profiles, and evaluated the relevance, clarity, and appropriateness of all competencies listed. Based on data obtained from these group discussions, individual interviews, and written comments some competencies were added, deleted and/or reformulated.

Ethical considerations

The study protocol (B.U.N.: B6702020001031) was approved by the ethical committee of Ghent University Hospital. Verbal and written information was provided to participants. Participation was entirely voluntary, and data were treated confidentially. Participants gave written and/or oral consent to audiotape the group discussions and individual interviews.

Data analysis

After each group discussion, debriefing with the research team took place to discuss content, main findings, to identify additional topics for exploration, and to consider potential revisions of the competency framework. Revisions were considered if they (1) clarified the competencies, (2) made differentiation with other expert nursing profiles more apparent, and (3) were congruent with internationally defined competency frameworks for APNs. The revised competency framework was immediately used and discussed in subsequent group discussions and individual interviews with other key stakeholders.

Data collection and data analysis were conducted concurrently, adding to the depth and quality of data analysis. The recordings of the group discussions and individual interviews with the board and members of the Belgian Association of APNs, and the physicians were transcribed verbatim to prevent data loss as these interviews contained the most detailed information on the drafted competency framework. The recordings of the other discussions were reheard by AVH and notes were taken. Notes were also taken during the discussions by several members of the research team and sent to AVH.

An inductive thematic analysis was performed. Such analysis enhances the identification of common threads across qualitative data (DeSantis et al., 2000) and is suitable for data analysis

when a relatively low level of interpretation is needed (Vaismoradi et al., 2013). No software package for qualitative data analysis was used. During the data analysis, the transcripts, notes of the group discussions, the research team's debriefings and written feedback, were re-read by the researchers (AVH, NJ), until familiarity with the data and obtaining a sense of the whole was achieved. Both group discussion and individual interview transcripts were integrated. During the readings, initial codes were formulated and highlights were made in the documents. During re-readings, two researchers (AVH, NJ), of which AVH has extensive experience in qualitative research, formulated initial themes. Although it was not the main focus to differentiate between opinions of alternative stakeholder groups, when analyzing the document, cross-case analysis was taken into account. If relevant, these differences were integrated in the intermediate results. The two researchers discussed their findings during several meetings, which resulted in an intermediate data analysis document. This document was discussed with several researchers (co-authors) who also attended the group discussions to ensure researcher triangulation. These preceding measures guaranteed the trustworthiness of data collection and analysis.

Results

Characteristics of the participants in the group discussions (n = 110) / individual interviews (n = 7) are outlined in Table 2. Written feedback was received from 26 key stakeholders: one physician, 22 participants attending a Walloon symposium on APNs, one nurse as member of a professional nursing association, and two nurses representing two universities of applied sciences. The three last mentioned stakeholders also attended the group discussions.

PLEASE INSERT TABLE 2 ABOUT HERE

Table 2: Characteristics of participants in the group discussions / individual interviews

Sample characteristics (n = 117)	
	N
Belgian Association for Advanced Practice Nurses	
Board members (APN and other stakeholders)	10
APN-Members with expertise in adolescent care, vascular access care, geriatrics, intensive care, mental health care, nutrition, oncology, pain	21
Physicians	
General practitioners	3
Medical specialists (cardiology, geriatrics, oncology, pediatrics, mental health, urology)	8
Representatives / professors of universities offering a Master of Science in Nursing program	
Flemish part of Belgium	10
Walloon part of Belgium	11
Representatives / lecturers of university colleges	15
Members of the General Association of Belgian Nurses	15
Nursing managers and representatives of healthcare organizations	18
Patient advisory board	6

Based on the thematic analysis, the findings from the group discussions, individual interviews and written feedback were linked to four overarching themes that emerged as main topics of the discussion.

Clarity and completeness of the competency framework for APNs

Participants considered the framework as comprehensive. However, there were concerns about how realistic the achievement of a large number of enabling competencies is for an APN. There was also discussion if some competencies should be considered as either key or enabling competencies. Some participants indicated overlap between formulated competencies. However, participants argued that the removal of certain competencies would compromise the accuracy, completeness and practical application of the framework.

When discussing the preliminary versions of the framework, several participants stressed the need to define concepts such as the domain of specialization, patient, complex care, interprofessional agreement statement, nurse-led care model, CNS versus NP, and clinical autonomy and to provide a short summary of each role of the APN. Especially, the concept of clinical autonomy was often discussed. The question was if this concept had to be added to each key- and enabling competency. Mainly physicians, nursing managers, some members of the Belgian Association of APN and some stakeholders from universities responsible for the APN master program had difficulties with integrating the concept 'autonomy' in the role of 'clinical expert and therapist'. They argued that using this concept could impede physicians' support for the framework, as today there is no legal framework for clinical autonomy available in Belgium. However, other participants argued for the inclusion of 'autonomy', stating that it is inherent to the APN profile. The analysis revealed that the majority of participants preferred the concept of autonomous clinical practice. So, this concept was retained. In addition, the importance of performing the 'clinical expert and therapist' role in an interprofessional collaborating context with the physician was made more explicit in the framework.

Furthermore, when deliberating the content of the APN framework, several participants expressed that some competencies of currently practicing APNs were underexposed, including: stimulating

patient participation and patient empowerment, strengthening advanced practice nursing care globally, detecting unmet needs in clinical practice and communicating these to both management and external (policy) parties, facilitating ethical decision-making, dealing with unpredictable situations, and developing, organizing and coordinating nurse-led care services.

Unclarity in differentiation from other expert nursing profiles

Based on the discussions, it was clear that several stakeholders were often not familiar with the different expert nursing profiles within the Belgian context and how these profiles were described. Participants insisted that the APN framework should substantially differentiate from competency frameworks for other expert nursing profiles (i.e. nurses at specialized / postgraduate level – Federale Raad voor Verpleegkunde, 2017). Especially, the stakeholders from universities of applied sciences, members of the professional nursing association, and French-speaking stakeholders commented on the differentiation between APNs and specialized nursing profiles. They stated that several competencies - mainly related to the roles as collaborator, health promoter, communicator, organizer of quality care, and clinical expert and therapist - cannot be assigned uniquely to APNs. Moreover, some members of the Belgian Association of APNs suggested that the competencies related to taking on a leading role in professional associations, professional working groups, and political decision-making bodies could be regarded as out of the scope of practice for APNs. They questioned whether this is more related to the profile defined by Federal Council of Nurses as 'clinical nursing researcher' (Federale Raad voor Verpleegkunde, 2017). This profile is related to the clinical nurse research consultant as described by Currey et al., 2011.

Integration and intended use of the CNS and NP competencies in one APN framework

Concerns were raised about the applicability of the framework for both advanced practice nursing functions, i.e. CNS and NP. As conceptual differences between CNS and NP do exist in Belgium, participants commented that some of the enabling competencies can be more suitable for a CNS or a NP and that both functions must not achieve all enabling competencies. However, the participants agreed that all key competencies were relevant for both advanced practice nursing functions. Integrating both functions in one APN framework allows flexible use of the framework, depending on the context, setting, needs and clinical practice. Because of the integration of the competencies for CNS and NP in one framework, they stated that the intended use of this competency framework should, however, be made clear. They mentioned that the framework should be regarded as an instrument to be used for personal and professional growth, indicating that it is not intended to be a checklist where each competency needs to be checked before APNs can start performing their job.

Appropriateness of the framework in different healthcare settings

The research team intended to develop a comprehensive competency framework applicable to APNs in different healthcare settings in Belgium. However, participants with a primary care background indicated that some concepts and competencies were rather oriented towards a hospital-based context. In the hospital setting, APNs work in an interprofessional, often fixed, team and are coached/supervised by nursing managers and physicians. In general, collaboration with an interprofessional team and management is differently organized in a primary care setting versus a hospital setting. Furthermore, participants with a background in mental health care also missed fundamental aspects of their practice (e.g. rehabilitation, trialogue, psychotherapeutic procedures, and psychosocial examination).

Based on these findings, the following changes were made to the APN competency framework:

- Overlap between competencies was resolved by carefully reconsidering all competencies and integrating them when appropriate.
- To ensure proper conceptual understanding, an introductory text was added to the framework in which the development process and a user guide were described. It also included a clarification of the following concepts: domain of specialization, patient, complex care, autonomous clinical practice, interprofessional agreement statement, nurse-led care model, interprofessional team, and nursing supervision in different healthcare settings (primary care versus hospital).
- Adding competencies and concepts related with mental health care, patient participation and patient empowerment, the international focus of APNs, detecting unmet needs in clinical practice and communicating these to both management and external (policy) parties, ethical decision-making, dealing with unpredictable situations, and development, organization and coordination of nurse-led care services.
- Differentiation with expert nursing profiles was made visible by pointing towards the fulfilment of all seven APN roles, by reformulating one role (organizer of quality care and leader in innovation), and by using more active verbs such as ‘initiates’, facilitates’, ‘optimizes’ and ‘being the pioneer in’. Subsequently, more differentiation was also sought by adding concepts as ‘evidence-based’ and considering the impact of APNs on micro-, meso- and macro-level. Information was added to clarify the different existing expert nursing profiles within the Belgian context.

The final APN framework consisted of seven roles, 31 key competencies and 120 enabling competencies (see Table 1). In the supplementary file, the comprehensive APN competency framework is outlined.

DISCUSSION

This study aimed to develop a competency framework for APNs in Belgium. The final framework consisted of seven APN roles (i.e. clinical expert and therapist, organizer of quality care and leader in innovation, professional and clinical leader, collaborator, researcher, communicator, and health promoter), 31 key competencies, and 120 enabling competencies. This framework was established in line with the 7 CanMEDS-roles. *While CanMEDS was initially designed for medical professionals, its principles have been recognized as valuable across various healthcare professions, including midwifery, nursing and allied health professions*.

Two debated topics during the co-design process will be reflected upon in this regard: the concept of clinical autonomy and the differentiation between APNs and other expert nursing profiles.

Some participants were reluctant of including the autonomy concept into the competency framework, mainly related to the clinical autonomy in the clinical expert and therapist role. In the review of Lockwood et al. (2022), several studies reported on the complexity of clinical autonomy of APNs within interprofessional relationships and a lack of recognition of APNs' clinical autonomy by healthcare professionals. However, different studies concluded that APNs who have no restrictive regulations on their scope of practice and their autonomy generated better outcomes, e.g. better patient education and patient satisfaction, reduced patient waiting times, better annual check-up uptake, and less emergency room visits (Lockwood et al., 2022; Traczynski et al., 2018).

DiCenso and colleagues (2010) argued that APNs whom are not working to their full scope of practice characterized by clinical autonomy, are considered a waste of human resources, leading to frustration, delays in treatment, and additional work for other healthcare professionals. Also other studies emphasized the need to enhance clinical autonomy in APNs to improve full utilization of these expert nursing profiles (Kerr & Macaskill, 2020; Park et al., 2018).

To date, the Belgian legislator defined that APNs need to work *"in close concertation with the physician and/or other healthcare professionals"* (Belgisch Staatsblad, 2019). Collaborative working relationships and competencies are depicted by Lockwood et al. (2022) as empowering to enhance APNs' clinical autonomy. However, one can question what is a meaningful next step in the Belgian context related to APNs' clinical autonomy. There are international examples of the implementation of collaborative practice agreements (CPAs) (e.g. Federico, 2007, Nederlandse Vereniging voor Cardiologie, 2012). However, studies outlined that these CPAs can be considered as confining ANPs' clinical autonomy (Athey et al., 2016) and can be used by physicians and other healthcare professionals to restrain APNs' patient caseloads, prescribing activity and scope of practice (Poghosyan & Liu, 2016; Schadewaldt et al., 2016). If CPAs can be a meaningful next step or not, APNs appear to be a group, who are and will be challenged regarding their autonomy in practice (MacLellan et al., 2016; Poghosyan & Liu, 2016).

Unclear differentiation between APNs and other expert nursing profiles was often expressed. Several reasons can explain this. Firstly, the discussions indicated that stakeholders were often not familiar with the definitions of expert nursing profiles in the Belgian context. This finding is congruent with other Belgian studies (Coudeville et al., 2020; Swaenepoel et al., 2020). Secondly, the competency framework was developed during important transitions within the educational

programs for specialized nurses in Belgium. This could create a context of competition between universities, responsible for master programs for APNs, and universities of applied sciences, organizing educational programs for specialized nurses. Since Belgium - as other European countries - suffers of a lack of a sufficient nursing workforce, it should be an opportunity to diversify the nursing workforce in competence and expertise, making the profession attractive for youngsters and retain nurses in practice. Thirdly, the French-speaking region was less familiar with advanced practice nursing functions in clinical practice. Until 2021, they did not provide a Master of Science in nursing programs for APN. Lastly, mainly members of the Belgian Association of APNs suggested that competencies related to leadership in professional development, by participation in professional associations, political decision-making bodies, and working groups, might be out of scope of practice for APNs. A possible explanation could be that it is challenging for APNs to take on this leadership role in professional development, as confirmed by Van Hecke et al. (2019). However, the latter is an internationally established APN competency (Hamric et al. 2014), as such, these leadership competencies were retained.

In our exploration of an APN competency framework for Belgium, it is valuable to draw parallels with and learn from initiatives undertaken in other contexts. When reviewing the current literature, several APN frameworks can be found such as the AACN Competency model, ICN 2020 Guidelines, Ann Hamric's model of APN, as well identified through literature reviews (Fullana S. et al., 2014). These frameworks share commonalities in emphasizing core competencies essential for advanced practice nursing. However, differences exist between these frameworks in terms of their origin, focus and specific competencies highlighted. For example, the ICN 2020 guideline provides a more global perspective, acknowledging diverse healthcare landscapes, while the CanMEDS framework is often adapted to the national or local setting. Furthermore, although a

vast set of core competencies can be found in all frameworks, the ICN 2020 Guideline explicitly mentions “ethical decision-making” as a key role, while the CanMEDS framework includes the role of a ‘professional’ covering the domain of ethical decision-making but does not label it explicitly as a role. While these frameworks converge on the importance of competencies like collaboration, leadership, and ethical practice, differences arise in their specificity, global applicability, and the unique emphasis they place on certain roles or domains. The varying scopes and origins of these frameworks contribute to their nuanced differences, reflecting the diverse needs of healthcare systems and practices globally.

Strengths and limitations

Some strengths and limitations need to be addressed. Firstly, this study included a heterogenous sample containing stakeholders from different settings and contexts, which increases generalizability (Holloway & Galvin, 2016). Also patient involvement was part of the collaborative approach. The adoption of a co-design development process in this study was deliberately chosen to ensure a comprehensive and contextually relevant development of an APN competency framework in Belgium. This collaborative approach, combining insights from a variety of stakeholders, aimed to incorporate a multitude of perspectives and expertise. By applying a co-design process, we sought to integrate the collective viewpoints of various key stakeholders, including healthcare practitioners, educators, administrators and a patient advisory board. Despite the intensive involvement of key stakeholders, this co-design process has not resulted in a validated APN framework. This finding is not exceptional. Recently, researchers validating the CanMEDS competency framework for other healthcare professions came to the

same conclusion (Janssens et al., 2022a). Secondly, during the drafting of the competency framework, the contribution of an expert within the field of competency framework building, based on CanMEDS, was meriting. Especially, linking a formulated APN competency to one specific CanMEDS role was sometimes challenging as it could be considered in line with more than one role, as also described by Frank et al., 2015. Thirdly, the large number of stakeholders participating at some (online) group discussions (max. 20 persons) was challenging. It implied that 'silent voices' attended the meetings. By inviting participants after each meeting to send additional feedback on the framework, if wanted, we tried to give voice to these participants.

Recommendations for clinical practice and education

The APN competency framework should be used as an instrument to scaffold continuous competency development or the growth mindset (Richardson et al., 2021), not as a checklist (Zibrowski et al., 2009). This finding is supported by Jokiniemi et al. (2018), who stated that an APN competency framework has the potential to strengthen performance and identify areas for professional development. In addition, the framework could be used by both APNs and their supervisors as an instrument for performance appraisal. It should map professional growth and can be integrated into clinical ladders in healthcare organizations, ensuring that all APNs roles are fulfilled and discussed between the supervisor and the APN, which is often lacking in current practice (Swaenepoel et al., 2020). The framework can also guide the development of APN education in Belgium and could assist in developing a uniform education, training and mentorship program for APNs. Although, the APN competency framework is developed in a Belgian context, it can enhance the development of advanced practice nursing profiles in countries where these profiles are still emerging. The collaborative methodologies used in our study, also including

patients and different healthcare professional disciplines, can inspire other international researchers and representatives of educational APN programs.

Furthermore, Belgian legislation concerning healthcare professionals requires APNs to maintain a(n) (e-)portfolio, demonstrating competence within their clinical domain of specialization (Law 22 April 2019). (E-)portfolios serve as (virtual) learning spaces where learners (students/professionals) can reflect on their learning journey; as centralized collections of work on which learners can be assessed; and as integrated showcases where learners can demonstrate their accomplishments to current and/or potential employers (Pegrum & Oakley, 2017). Among healthcare professions, (e-)portfolios are currently used in undergraduate and postgraduate education, as well as for the maintenance of continuous professional development (Sidduiqi et al., 2022). The developed APN competency framework can be used as the basis for the development of such a professional (e-)portfolio for APNs in postgraduate APN education, training and practice. Clear understanding and articulation of intended learning outcomes will facilitate the design of appropriate assessments to measure achievement, the competencies development and a growth mindset (Janssens et al., 2022b; Mohieldein, 2017).

Recommendations for policymakers

Although the recent Belgian legal framework on APNs is a major step forward, several aspects need to be elaborated on and clarified before APN roles can be legally implemented and recognized in practice. The developed APN competency framework has a future-oriented nature by including competencies currently not supported by the Belgian legal framework. Specifically concerning the role of clinical expert and therapist, it is recommended to make changes to the legal authority rights of APNs. These adjustments are crucial to facilitate the

implementation of APN-led care models and to ensure that APNs can effectively use the competencies they have been or will be trained for within their specialized domains, in collaboration with physicians and other healthcare professionals. The suggested modifications include granting authority for (medication) prescription, the ability to diagnose, the authorization to conduct clinical assessments and order medical tests, the capability to initiate (psychotherapeutic) treatments, the power to refer patients to other healthcare professionals, the authority to decide on admission/discharge, and the capacity to act as the first point of contact for patients and be responsible for a panel of patients. Therefore, the authors urge policymakers to make progress in the legal recognition of APNs within a long-term vision on nursing and interdisciplinary practice in all domains of health care, as APNs have the potential and capacity as well to enforce the nursing profession crucial in the current and future health care. ~~APNs have also the potential to be partners in task substitution (e.g. in general practitioner poor regions) and the delivery of efficient and effective care. They show leadership to develop, integrate, and implement innovative care (models) at organizational level systems and practices to ensure advancement in clinical practice.~~

Until to date, the APN competency framework has also been integrated in the advice by the Federal Council of Nurses on the importance on clinical autonomy for APNs (2023). Discussions with the policymaking bodies such as the High Council of Physicians - specialists and general practitioners and the relevant stakeholders at the department of the federal minister of health care are initiated.

Recommendations for future research

Although key stakeholders from different clinical settings were involved in the development of the APN competency framework, research is needed to test its usability and feasibility, also in non-hospital settings (e.g. primary care, mental health care, long-term care settings). In these studies,

the perspectives of employees and (nursing) management regarding the framework can be integrated to enhance its accuracy, relevance and applicability. Future studies can also focus on the measurement and evaluation of APNs' competency levels against the framework by means of an observational or self-reported approach.

CONCLUSION

We developed a competency framework for APNs in Belgium through a co-design process. The framework consists of seven APN roles (i.e. clinical expert and therapist, organizer of quality care and leader in innovation, professional and clinical leader, collaborator, researcher, communicator, and health promoter), 31 key competencies, and 120 enabling competencies. This APN framework should be validated and tested for usability and feasibility in education, training, clinical practice, continuous professional development activities, and the development of a professional (e-)portfolio for APNs. To conclude, policymaking bodies are encouraged to use this competency framework to strengthen the legal recognition and protection of APNs in Belgium.

FUNDING

No funding was received for this study.

CONFLICT OF INTEREST

The authors indicate no conflicts of interest, although the research team was involved in educational programmes for Advanced Practice Nurses in Belgium.

ACKNOWLEDGEMENTS

The authors want to thank all the participants in this study for their contribution in discussing drafts of the competency framework and more specifically also the following additional experts of the Consortium Namur (Cécile Dury, Marie Erpicum), the consortium Mons Hainaut (Ludovic Ghislain), the consortium MSI Brussels (Nataly Filion, Barbara Schmit) and the consortium Liège-Luxembourg (Myriam Carlisi, Sabrina Chevalier, Laurence Piron, Justine Slomian.

REFERENCES

Athey, E. K., Leslie, M. S., Briggs, L. A., Park, J., Falk, N. L., … & Greene, J. (2016). How important are autonomy and work setting to nurse practitioners' job satisfaction? *Journal of the American Association of Nurse Practitioners*, 28, 320-326. doi:10.1002/2327-6924.12292

Baldwin, K., Clark, A., Fulton, J., & Mayo, A. (2009). National validation of the NACNS clinical nurse specialist core competencies. *Journal of Nusing Scholarship*, 41, 193-201. doi:10.1111/j.1547-5069.2009.01271.x

Belgisch Staatsblad – Moniteur Belge (2019). *Wet tot wijziging van de gecoördineerde wet van 10 mei 2015 betreffende de uitoefening van de gezondheidszorgberoepen*. https://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=nl&la=N&cn=2019042219&table_name=wet

Belgische Vereniging voor Verpleegkundig Specialsten. (2018). *Conceptnota functie- en competentieprofiel Verpleegkundig Specialist: Adviesnota*.

Coudeville M., Decoene, E., & Van Hecke, A. (2020). *De verpleegkundig specialist in de eerstelijns gezondheidszorg: Een exploratieve kwalitatieve studie*. Master dissertation, Ghent University.

Currey, J., Considine, J., & Khaw, D. (2011) Clinical nurse research consultant: a clinical and academic role to advance practice and the discipline of nursing. *Journal of Advanced Nursing*, 67, 2275–2283. doi:10.1111/j.1365-2648.2011.05687.x

DeSantis, L., & Noel Ugarriza, D. The concept of theme as used inqualitative nursing research. (2000). *Western Journal of Nursing Research*, 22, 351-372. doi:10.1177/019394590002200308

DiCenso, A., Bourgeault, I., Abelson J., Martin-Misener, R., Kaasalainen, S., … Kilpatrick K. (2010). Utilization of nurse practitioners to increase patient access to primary healthcare in Canada--thinking outside the box. *Nursing Leadership*, 23, 239-59. doi:10.12927/cjnl.2010.22281

European Specialist Nurses Organisations (2015). *Competences of the Nurse specialist (NS): Common plinth of competences for a Common Training Framework of each specialty.*

Federale Raad voor Verpleegkunde. (2017). *Functiemodel voor de verpleegkundige zorg van de toekomst*. https://overlegorganen.gezondheid.belgie.be/sites/default/files/documents/2017_07_04_schemas_1.pdf

Federale Raad voor Verpleegkunde. (2018) *Functie- en competentieprofiel Verpleegkundig specialist*. https://overlegorganen.gezondheid.belgie.be/nl/documenten/functie-en-competentieprofiel-van-de-verpleegkundig-specialist

Federale Raad voor Verpleegkunde. (2023) *Gezamenlijk advies FRV/TCV betreffende de verpleegkundige specialist*. https://overlegorganen.gezondheid.belgie.be/nl/documenten/gezamenlijk-advies-frvtcv-betreffende-de-verpleegkundige-specialist

Federico, A. (2007). Innovations in care: The nurse practitioner in the PACU. *Journal of PeriAnesthesia Nursing*, 22, 235-242. doi:10.1016/j.jopan.2007.05.008

Frank, J., Snell, L., Sherpino J. (2015). *The CanMEDS 2005 physician competency framework.* Ottawa: Canada Royal College of Physicians and Surgeons of Canada.

Sastre Fullana, P., De Pedro-Gómez, J. E., Bennasar-Veny, M., Serrano-Gallardo, P., Morales-Asencio, J. M.. (2014). Competency frameworks for advanced practice nursing: A literature review. *International Nursing Review*, 6: 532-42. doi:10.1111/inr.12132

Hamric, A. B., Hanson, C. M., Tracy, M. F., & O'Grady E. T. (2014). *Advanced practice nursing: an integrative approach.* (5th ed.). Missouri: Elsevier Health Sciences.

Hawkins, R. E., Welcher, C. M., Holmboe E. S., Kirk, L. M., Norcini J. J., … Skocelak, S. E. (2015). Implementation of competency-based medical education: are we addressing the concerns and challenges? *Medical Education* 49, 1086-1102. doi:10.1111/medu.12831

Heinen, M., van 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, 2378-2392. doi:10.1111/jan.14092

Holloway, I., & Galvin, K. (2016). *Qualitative research in nursing and healthcare*. (4th ed.) Wiley-Blackwell.

Hurlock-Chorostecki, C., Forchuk, C., Orchard, C., Reeves, S., & van Soeren, M. (2013). The value of the hospital-based nurse practitioner role: development of a team perspective framework. *Journal of Interprofessional Care,* 27, 501-508. doi:10.3109/13561820.2013.796915

International Council of Nursing (2020). *Guidelines on Advanced Practice Nursing.* Geneva, Switzerland. ISBN: 978-92-95099-71-5

Janssens, O., Embo, M., Valcke, M., & Haerens, L. (2022a). An online Delphi study to investigate the completeness of the CanMEDS Roles and the relevance, formulation, and measurability of their key competencies within eight healthcare disciplines in Flanders. *BMC Medical Education*, 22, 1-14. doi:10.1186/s12909-022-03308-8

Janssens, O., Haerens, L., Valcke, M., Beeckman, D., Pype, P., & Embo, M. (2022b). The role of ePortfolios in supporting learning in eight healthcare disciplines: A scoping review. *Nurse Education in Practice*, 63, 103418. doi:10.1016/j.nepr.2022.103418

Jokiniemi, K., Meretoja, R., & Pietilä, A. M. (2018). Constructing content validity of clinical nurse specialist core competencies: exploratory sequential mixed-method study. *Scandinavian Journal of Caring Sciences,* 32, 1428-1436. doi:10.1111/scs.12588

Jokiniemi, K., Pietilä, A., Mikkonen S. (2021). Construct validity of clinical nurse specialist core competency scale: An exploratory factor analysis. *Journal of Clinical Nursing*, 30, 1863-1873. doi:doi.org/10.1111/jocn.15587

Jonnaert, P., Ettayebi., M., Definse, R. (2009). *Curriculum et compétence. Un cadre opérationnel.* De Boeck Supérieur, Belgique.

Kaldan, G., Nordentoft, S., Herling, S. F., Larsen, A., Thomsen, T., & Egerod, I. (2019). Evidence characterising skills, competencies and policies in advanced practice critical care nursing in Europe: a scoping review protocol. *BMJ Open,* 9, e031504. doi:10.1136/bmjopen-2019-031504

Kerr, L., & Macaskill, A. (2020). Advanced nurse practitioners' (emergency) perceptions of their role, positionality and professional identity: A narrative inquiry. *Journal of Advanced Nursing*, 76, 1201-1210. doi:10.1111/jan.14314

Kluge, H. (2022). *Inaugural keynote of the WHO Regional Director of Europe*. European Forum of Primary Care, Ghent, 26-09-2022. euprimarycare.org

Laurant, M., van der Biezen, M., Wijers, N., Watananirun, K., Kontopantelis, E., & van Vught, A. J. (2018). Nurses as substitutes for doctors in primary care. *The Cochrane Database of Systematic Reviews, 7*, CD001271. doi:10.1002/14651858.CD001271.pub3

Lockwood, E. B., Lehwaldt, D., Sweeny M. R., Matthews A. (2022). An exploration of the levels of clinical autonomy of advanced nurse practitioners: A narrative literature review. *International Journal of Nursing Practice*, 28, e12978. doi: 10.1111/ijn.12978

MacLellan, L., Levett-Jones, T., & Higgins, I. (2016). The enemy within: Power and politics in the transition to nurse practitioner. NursingPlus Open, 2, 1-7. doi:10.1016/j.npls.2016.01.003

Michels, N. R., Denekens J., Driessen E. W., Van Gaal, L. F., Bossaert, L. L., De Winter, B. Y. (2012). A Delphi study to construct a CanMEDS competence based inventory applicable for workplace assessment. *BMC Medical Education* 12, 1-9. doi:10.1186/1472-6920-12-86

Mohieldein, A. H. (2017). Outcome-based approach to medical education towards academic programmes accreditation: A review article. *Journal of the Pakistan Medical Association*, 67, 454-460.

Nederlandse Vereniging voor Cardiologie (2012). *Taakherschikking in het hart van de zorg: Consensusdocument allied professionals in de cardiologie*. https://www.nvvc.nl/Richtlijnen/Tabel%207%20Voorschriften%20cardiologische%20praktijk_instelling/2012_Taakherschikking_in_het_hart_van_de_zorg.pdf

Park, J., Athey, E., Pericak, A., Pulcini, J., & Greene, J. (2018). To what extent are state scope of practice laws related to nurse practitioners' day-to-day practice autonomy? *Medical Care Research and Review*, 75, 66-87. doi:10.1177/1077558716677826

Pegrum, M., & Oakley, G. (2017). *The Changing Landscape of E-Portfolios: Reflections on 5 Years of Implementing E-Portfolios in Pre-Service Teacher Education*. In: E-Portfolios in Higher Education. doi:10.1007/978-981-10-3803-7_2

Poghosyan, L., & Liu, J. (2016). Nurse practitioner autonomy and relationships with leadership affect teamwork in primary care practices: A cross-sectional survey. *Journal of General Internal Medicine*, 31, 771-777. doi:10.1007/s11606-016-3652-z

Ranchal, A., Jolley, M. J., Keogh, J., Lepiesova, M., Rasku, T., & Zeller, S. (2015). The challenge of the standardization of nursing specializations in Europe. *International Nursing Review,* 62, 445-452. doi:10.1111/inr.12204

Richardson, D., Kinnear, B., Hauer, K. E., Turner, T. L., Warm, E. J., ... & ICBME Collaborators. (2021). Growth mindset in competency-based medical education. *Medical Teacher*, 43, 751-757. doi:10.1080/0142159X.2021.1928036

Sastre-Fullana, P., De Pedro-Gómez, J. E., Bennasar-Veny, M., Serrano-Gallardo, P., Morales-Asencio, J. M. (2014). Competency frameworks for advanced practice nursing: A literature review. *International Nursing Review*, 61, 534-42. doi:10.1111/inr.12132

Schadewaldt, V., McInnes, E., Hiller, J. E., & Gardener, A. (2016). Experiences of nurse practitioners and medical practitioners working in collaborative practice models in primary healthcare in Australia—a multiple case study using mixed methods. *BMC Family Practice*, 17, 1-16. doi:10.1186/s12875-016-0503-2

Scheffler, R., & Arnold, D. R. (2019). Projecting shortages and surpluses of doctors and nurses in the OECD: What looms ahead. Health *Economics, Policy and Law*, 14, 274-290. doi:10.1017/S174413311700055X

~~Sheer, B., & Wong, F. K. (2008). The development of advanced nursing practice globally. *Journal of Nursing Scholarship,* 40, 204-211. doi:10.1111/j.1547-5069.2008.00242.x~~

Siddiqui, Z. S., Fisher, M. B., Slade, C., Downer, T., Kirby, M. M., ... & Wilson, C. B. (2022). Twelve tips for introducing E-Portfolios in health professions education. *Medical Teacher*, 1-6. doi:10.1080/0142159X.2022.2053085

Swaenepoel, S., Decoene, E., & Van Hecke, A. (2020). *Percepties en ervaringen van leidinggevenden over de samenwerking met verpleegkundig specialisten en - consulenten binnen de oncologische setting*. Master dissertation, Ghent University.

Traczynski, J, Udalova, V. (2018). Nurse practitioner independence, health care utilization, and health outcomes. *Journal of Health Economics*, 58, 90-109. doi:10.1016/j.jhealeco.2018.01.001

Universitaire Denktank - Decoene, E., Dobbels, F., Goossens, E., Goossens, L., Timmermans, O., van Achterberg, T., Van Bogaert, P., Van Hecke, A., Van Rompaey, B., Verhaeghe, S. (2020). *Opleiding, erkenning en toepassing van de functie 'Verpleegkundig Specialist' in België*.

Vaismoradi, M., Turnunen, H., Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences*, 15, 398-405. doi:10.1111/nhs.12048

Van Hecke, A., Goemaes, R., Verhaeghe, S., Beyers, W., Decoene, E., & Beeckman, D. (2019). Leadership in nursing and midwifery: Activities and associated competencies of advanced practice nurses and midwives. *Journal of Nursing Management,* 27, 1261-1274. doi:0.1111/jonm.12808

Van Hecke, A., Van Bogaert, P., Decoene, E., Dobbels, F., Goossens, E., ... Goffin, T. (2020). A legal framework on advanced practice nursing in Belgium: what do we and don't we know? *Acta Clinica Belgica,* 77, 65-70. doi:10.1080/17843286.2020.1795575

V&VN Verpleegkundig Specialisten (2019). *Beroepsprofiel Verpleegkundig Specialist*. Nederland.

World Health Organization. (2022). *Global competency and outcomes framework for universal health coverage.* https://apps.who.int/iris/handle/10665/352711. License: CC BY-NC-SA 3.0 IGO

Zibrowski, E. M., Singh, S. I., Goldszmidt, M. A., Watling, C. J., Kenyon, C. F., ... Lingard, L. (2009). The sum of the parts detracts from the intended whole: Competencies and in-training assessments. *Medical Education*, 43, 741-748. doi:10.1111/j.1365-2923.2009.03404.x