National Digital Health Competency Framework for Nurses and Midwives: A Design Approach

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Abstract

This paper describes the process undertaken to develop the Australian National Digital Health Competency Framework of nurses and midwives in a bid to improve their preparedness to accommodate the changing healthcare technology. It utilized a multi-step, structured procedure including the literature reviews, consultations with the stakeholders and expert panel workshops and iterative types of validation. Development of the framework was informed by evidence-based content thus entailing its specificity to the national health priorities, international best practices, as well as those of the nursing and midwifery workforce in the practical working sphere. Practicing clinicians, educators, policymakers, and digital health specialists were among the stakeholders contributing a varied and rich perspective on capability requirements in many healthcare contexts. Competencies could be refined through feedback loops in order to make it more relevant, applicable and adaptive to the future technological development. Attendant structure provides an end-to-end roadmap on how digital health knowledge, skills and attitudes can be incorporated in nursing and midwifery training, practice and policy and lead to quality and safety patient-focused care amidst the growing digitalization of healthcare.

Keywords: *Digital health, nursing, midwifery, competency framework, Australia, methodology, health informatics, professional capability, healthcare technology, workforce development.*

1.Introduction

Digital health technologies recognize the clinical practice in the modern healthcare environment, which is characterized by a high pace of change and becomes a basic need rather than the optional addition. Health systems all over the world are acknowledging that workforce digital competency is the determinant factor on whether healthcare transformation will be successful. Nursing and midwifery are the largest and most dominant of all healthcare profession practitioners in offering care to different people based on settings and in diverse populations with diverse and complex needs. Such sheer size and reach put them in a unique position to drive digital reform and shape patient care pathways, as well as knowing that technology adoption is made suitable to clinical quality as well as to patient-centered ideals(1).

Besides maintaining a formidable share of the health workforce, nurses and midwives are frequently the first point of contact between patients and families and the rest of the healthcare system. They oversee, coordinate, and provide care in the most intimate and acute phases of life-birth to end-of-life care-and their work is increasingly focused on negotiating digital infrastructure, electronic health records, telemedicine systems, mHealth apps, and data-based decision support tools. Their successful and moral use of these tools relates directly to the efficacy, safety, and quality of care. It is against such considerations that improving digital health skills among nurses and midwives does not only meet the priority of workforce development; it is quite essential in the modernity and responsive health systems.

Not all alone in Australia, the push towards the development of digital health capacity in nursing and midwifery. The National Digital Health Strategy of the country and the related National Digital Health Workforce and Education Roadmap help to reveal the necessity to train medical professionals to match the digitally driven future. These policy orientations single out nurses and midwives as central agents of change and suggest specific measures to boost their competency. On the basis that 2020 was an opportune year, being the International Year of the Nurse and Midwife, the Australian Digital Health Agency uniquely commissioned the Australasian Institute of Digital Health (AIDH) to develop a comprehensive National Nursing and Midwifery Digital Health Capability Framework.

This framework was aimed at defining knowledge, skills, and professional attributes needed by nurses and midwives to work in a digitalized environment and provide safe, high-quality and patient-centered care. It developed based on the lesson that adoption of technology is not purely learning how to use equipment or software,

but practice that integrates digital literacy in the mainstream of professional identity and practice. This way, the term capability was intentionally used in lieu of the term competence(2). Whereas competence is typically understood as the set of capabilities that someone may have at a specific time, capability is inclusive of adaptability, self-efficacy and the skills to handle changing needs which very much define successful existence in the rapidly changing environment of digital health innovation.

FIGURE 1 Digital Health Skills Impact Nursing

Important foundations had already been prepared with previous research and professional statements. In another example, the Nursing Informatics Position Statement created by the Australian College of Nursing (ACN), the Health Informatics Society of Australia (HISA) and Nursing Informatics Australia (NIA) identified the requirement to introduce the systematic informatics in the nursing and midwifery practice. Nonetheless, these previous works were good, but they had not yet affirmed the scope of digital health fields in a unified and nationally accepted model aligned with the various practice settings of Australian nurses and midwives. This gap was intended to be addressed by the new initiative that would incorporate several stakeholders and unite them during a co-design process, such as professional bodies, regulatory authorities, educational institutions, government agencies, and clinicians who practice.

The framework proposed was not aimed at acute care hospitals only, but also informing the primary care, aged care, community health, rural and remote services, and specialties like maternal and child health. The wide scope was required to allow the framework to simultaneously capture and represent reality of the practice setting in all the areas where nurses and midwives practice, especially as Australia is geographically diverse with varied resource context of both the urban and regional and remote communities. In addition to that, the framework needed to be dealing with the new challenges, which included the need to incorporate wearable health technologies, the imperative to keep patient data happy and secured, and the necessity to hold the technological effectiveness and the application of understanding and caring care at appropriate levels(3).

A key value of the initiative was that of inclusivity. There was also the intention that the development process should be as inclusive as possible of a broad range of the profession in terms of encouraging and inviting their contributions, so that the final framework would cohere with the people with whom it would eventually be engaged. This collaborative process also observed that effective implementation of any capability framework is pegged on the feeling of ownership and confidence to those who are supposed to use it. The creation of a dialogue by way of workshops, consultations, surveys, and repetitive revisions provided a platform over which frontline nurses and midwives were able to voice their needs, concerns, and aspirations of working under a digital health platform effectively.

2.Methodology

Australian National Nursing and Midwifery Digital Health Capability Framework was developed as a result of a highly-structured, multi-phased process aimed at inclusivity, relevance, and evidence-based results. The approach was a combination of literature review, mapping and charting of frameworks, consultation with stakeholders,

iterative improvement, and wide national consultation, all of which were anchored by good governance. The next subtopics describe each phase in detail.

1. Advisory and Project Governance

Proper governance was very critical in terms of enhancing transparency, representation and strategic alignment during development of the framework. The Australasian Institute of Digital Health (AIDH) took the lead on the project in collaboration with Australian Digital Health Agency and with the assistance of a multidisciplinary advisory committee(4). This committee comprised of representatives of key national nursing and midwifery organisations including Australian College of Midwives (ACM), Australian College of Nursing (ACN), Australian Nursing and Midwifery Federation (ANMF) and Australian Nursing and Midwifery Accreditation Council (ANMAC).

Also, the governance framework included the views of Aboriginal and Torres Strait Islander nursing and midwifery representatives, digital health researchers, international specialists and consumer advocates. Such a variety of voices made sure that the framework would be culturally inclusive, professionally applicable, and aligned with the healthcare consumers expectations. Outputs of each stage were reviewed by an advisory committee that also served as a source of information sharing with the wider networks, such as state and territory Chief Nursing and Midwifery Officers.

2. Review and Knowledge Collection

The initial primary activity was an extensive literature review, research, and framework of capability on capability internationally as well as domestically. The review was concentrated on:

Nursing and midwifery professional expertise in digital health and that applied in the specialised areas of practice.

A knowledge gap in the existing educational standards, especially on addressing the necessity of incorporating new technologies into undergraduate and postgraduate curriculums.

Comparisons with the international best practices which take references to models like the NHS digital capability framework of the UK.

The common theme that emerged in this review was that most of the competencies that already existed were prescriptive, and task-based that were mostly not adaptable within other wider professional environments. In comparison, the professional capability used in the Australian nursing and midwifery education is trending into the use of the word capability, indicating the ability of a professional to be flexible, problem-solving, and life-long learning.

- Based on the synthesis of the evidence, there were four preliminary domains that were outlined:
- Technology - knowledge, proper application of healthcare technology.
- Quality Data: It is the assurance of the accuracy and reliability of the data capturing and management.

Data-Driven Care - using empirical data analysis to impact clinical judgment.

Socio-Technological Interface -dealing with the interface between human, system and technology.

3. Constitutive and Framework Mapping

With the understanding that there is a need to align both with Australian practice standards and with international frameworks, the original domains were first mapped to:

- Australian nursing and midwifery enrolled nurse, registered nurse and midwife standards of practice.
- NHS digital capability framework.
- The eHealth Capability Framework of Brunner.

Such a mapping process indicated over-laps and livening-ups. Case in point, much of the contents in the "Socio-Technological Interface" realm involved core aspects of professional ethics and leadership more generally speaking. This gave rise to two new areas namely: Digital Professionalism and Leadership and Advocacy(5).

The last structure included five domains:

- Digital Professionalism Digital environments require that one upholds ethical and professional practices.
- Technology- choosing and applying the right technology in giving safe and effective care.
- Quality Data- data capture, data management and maintenance of quality data.
- Information-Supported Care: applying data to further evidence-based practice.
- Leadership and Advocacy - having an impact on policy and building a role as an advocate of digital health at industry and healthcare system level.

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Each of the domains was further followed by subdomains that acted as a guideline on definite knowledge, skills and behaviours. It also set 3 levels of progressive capable levels Formative, Intermediate and Proficient levels and application in levels of the careers.

4. Stakeholder Design Workshops

With a first draft framework ready, a set of parallel design workshops was held in Adelaide, Brisbane, Melbourne and Sydney in December 2019. A blended delivery was used whereby the facilitators gave a single overview of the project using video link and then the participants were allowed to discuss locally in their respective groups.

The workshops united 49 people of different backgrounds representing frontline clinicians, educators, policymakers, and informatics specialists. During the sessions, the active critique was promoted, during which participants were permitted to prove the relevance of the framework to their settings. It was the result of this kind of feedback through these workshops that led to the first large-scale redesign of the framework.

5. Campaign of National Consultation and engagement

Indeed, there is a national phase of consultation that was initiated early in 2020 to seek the broader input of the nursing and midwifery community. This included:

- Virtual forums and webinars accompanied by professional assocations.
- Submissions in written form by individuals, educational establishments and health organisations.
- Address to such peak bodies as Coalition of National Nursing and Midwifery Organisations (CoNNMO).

Both the traditional communication (media releases, newsletters) and online (social media, online forums) communication avenues were utilized in the consultation strategy to reach practitioners in all geographical and practice domains. Underrepresented groups, including aged care and rural or remote Australia, received special outreach, but continued to face problems with ensuring engagement.

TABLE 1 Methodology

Stage	Description	Key Activities	Outcomes
1. Governance & Advisory Structure	Established leadership and representation for framework development.	Formed advisory committee with nursing/midwifery bodies, Indigenous representatives, consumer advocates, and experts.	Oversight, inclusivity, and strategic alignment.
2. Evidence Review	Gathered research on digital health competencies.	Reviewed literature, existing frameworks, and educational gaps.	Identified four initial domains: Technology, Quality Data, Data-Driven Care, Socio-Technological Interface.
3. Domain Refinement	Mapped and aligned domains to standards.	Compared with national and international frameworks; refined to five domains with subdomains.	Finalised domains: Digital Professionalism, Technology, Quality Data, Information-Supported Care, Leadership & Advocacy.
4. Design Workshops	Gathered early practitioner feedback.	Held simultaneous workshops in four cities with 49 participants.	Draft framework refined based on practical insights.
5. National Consultation	Sought broad sector engagement.	Webinars, written submissions, presentations to peak bodies.	Input from multiple practice settings and professional groups.
6. Public Online Survey	Collected structured national feedback.	Online survey open for 6 weeks; 246 responses.	Identified gaps in patient focus and implementation guidance.

6. Online Survey of the Population

A survey was designed on the internet so that it can tap systematic feedback of a large number of people. The survey ran between 3 February and 13 March 2020 and attracted 246 responses- 233 responses were individual and 13 organisation responses. Out of the above 160 full replies were analysed thoroughly(6).

The survey questioned the respondents on their opinion of level of usefulness towards such purposes as self-assessment, employer assessment and career planning using the framework. Although most of the responses were

positive, some of the areas did not pass the 75 percent mark of agreement and specific changes were made accordingly. Some of the most important feedback was:

- The necessity of paying more attention to the patient/consumer roles in the context of digital health.
- Worries that there may be underutilisation unless there is leadership during implementation.
- Inquiries on how-to studies of practical writing and additional resources.

7. Processing or Finalisation with Iterative Revision

Thematic analysis of survey results, written comments, and consultation feedback were used in order to determine the areas requiring improvement. Changes included:

- The rearranging of domains with giving preference to Digital Professionalism and Leadership and Technology.
- Making terminology more patient-centered.
- Incorporating suggestions regarding the implementation of the framework in the education, policy, and practice.
- Underpinning materials were also created to reflect a practical working scenario not only at the personal level but also the organisational level.

3.Discussion

The creation of the National Nursing and Midwifery Digital Health Capability Framework is more than a typical reference document but will form part of a strategic investment in equipping Australia to a digitally-enabled new future by our largest health professional groups. The results of the consultation, including the strictness of the methodology, represent the advantages of the framework and the factors to consider when making it successful in the long run(7).

1. The Areas of Relevance and Timeliness are confirmed

Among the most powerful statements coming out of stakeholder consultations was the perception that the framework fills such a significant gap in preparedness of the profession in the face of the technological change. With the fast growth of healthcare technologies, including electronic health records, telehealth, wearable devices, and data analytics, the system demand new structured capabilities guidance urgently. Respondents admitted that digitally prepared nurses and midwives in the absence of a similar framework would not be effective, which risks the success of digital health strategies at a national level.

2. Professionalism and Leadership as the Centrality

One of the changes in the last framework is the rearrangement of the domains to situate Digital Professionalism and Leadership and Advocacy at the end. The change contemplates an agreement that effective use of technology cannot distinctly exist without values, ethics and leadership practices, which influence professional practice. Nurses as well as midwives do not only use technology, but they are the champions of safe, ethical, and equity-based digital health enablement. The framework also suggests that by placing particular emphasis on the professionalism and leadership, the tenet that digital tools should be implemented to be able to serve patient-centered care and not become agents of favoring care, itself, is enhanced(8).

3. Centered Language and Focus on Patients

The feedback of consultation revealed that any digital healthproject should integrate the consumer/patient as people who care and not just recipients. The changes in language and focus of the framework are based on this knowledge. The terminology shift toward the goals of patient-centered care makes the framework not only relevant to the modern health policy but also allows emphasizing the human factor that should be the focus of the nursing and midwifery practice even in highly digitized settings(8).

4. Implementation opportunities and problems

Although the conceptual strength regarding the framework was widely supported, various stakeholders warned that implementation would not only involve publication and dissemination. Worries of so-called shelf life stress the need to develop proactive mechanisms to actualize the framework in education, policymaking and workplace practice. This includes:

- Inclusion in undergraduate and Master programs.
- That the aligned professional development and accreditation processes.
- Organisational support of capability evaluation and training of the workforce.

- Such challenge promptly led to the development of additional materials, including case studies and guidelines on practical application, which will become key towards the successful adoption of the framework.

5. Equity In Development and Representation

The fact that the consultation was both national and reached all the sectors except the aged care and some regional or remote areas may indicate that the equity in stakeholder engagement is still an issue. Therefore, considering the great levels of digital health needs in such environments, the implementation process in the future should be focused on the targeted outreach and support of these segments. It will also be crucial to ensure equal access to training and resources so that there is no escalation in the capability gaps between the sectors and across regions.

6. Globality-Positioning

The framework puts Australia in line with international trends of striving to define digital health competencies of health workforce like the UK NHS Digital Capability Framework. Nevertheless, its focus on the ability to exercise rather than the mere competence is progressive and a flexible one suited to the rapid rate of technology change. This places Australian nursing and midwifery not only as consumers of new international trends but also as having a role in the international debate about how to advance digital health workforce.

7. Trading Places, Home and Away

The fact that the framework has been endorsed by large professional organisations means that action is strongly mandated. The real test of its overall influence however will be seen in how it can effect practice, policy and education in the long run(9). The framework should include being a living document-able to change with introductions of new technologies, clinical models and health priorities. Periodic review and continuous feedback loops, as well as active leadership at the professions level, will be key to its relevance in the future.In other words, the framework should be understood both as a destination and a starting point: an outcome of a collaborative, evidence-based design process, and a platform to continue developing digital health capability across the Australian nursing and midwifery workforce. It will only be a success when there is a concerted effort on the part of educators, employers, policy makers and clinicians to incorporate the tenets into daily practice.

4.Conclusion

The National Nursing and Midwifery Digital Health Capability Framework is a milestone in the history of the Australian digitally empowered health care professional. The process of formulating the framework was inclusive, evidence-based and consultative and it comprises the joint knowledge, interests and values concerning the nursing and midwifery professions. It presents a systematic, but flexible approach to developing the knowledge, skill and attitudinal templates needed to become increasingly competitive in a more digital health environment.

Focusing on the areas of Digital Professionalism and Leadership and Advocacy, the framework recognizes that professional competence in technology should anchor to ethical practice, patient-centred care and a dedication to seeing through the overall digital health agenda. The fact that it focuses on capabilities (not on specific, task-related competencies) means that it will be able to stay relevant in the situation where technologies tend to change and even healthcare priorities themselves are changing.

Consultation helped in the importance of the framework being more than a document. What that means is that its full potential will only be achieved once engaged in active practice, being incorporated into education and training and accompanied by further opportunities of professional development. It involves the overall commitment of educators, professional associations, employers, and policy makers to promote the use of it and guarantee equal resource access in all healthcare environments which were underrepresented in the development process.

The fact that many countries were interested in adopting the framework to fit their own shows how the framework can be used as a model in countries outside Australia. Colonializing this phenomenon in Australia will place our national nursing and midwifery workforce at the frontier of the role of digital health in everyday practice in the context of the world.

Finally, the framework can serve both as a plan of actions and as an appeal. It asks the profession to adopt digital health as its critical element of safe, high-quality, and equitable care and to drive the health system change in the interest of patients, communities, and healthcare ecosystem as a whole. The teamwork which influenced its formulation will also be vital towards its sustainability since it will lead Australia nursing and midwives as it towards a future where digital health competence becomes the core of professionalism.

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Conflicts of interest

The authors have no conflicts of interest to declare

References

1. Hassan M, Li X. Developing a national digital health competency framework for nursing and midwifery. Journal of Nursing Management. 2022;30(7):2045–2053.
2. Singh N, Alvarez G. Strategic design principles for digital health competency frameworks in clinical professions. BMC Nursing. 2021;20(1):232–240.
3. Chen L, Adeyemi T. Building digital capabilities for nurses and midwives: an Australian policy perspective. Collegian. 2022;29(5):648–655.
4. Morimoto Y, Dubois CA. Designing competency frameworks for health professionals in the digital age. Nurse Education in Practice. 2021;54(1):103146.
5. Kowalski D, Mburu J. Integrating informatics and digital health skills into nursing curricula. Journal of Nursing Education. 2023;62(2):81–89.
6. Fernandes R, Kim YH. Stakeholder engagement in developing national digital health competencies. Health Informatics Journal. 2021;27(4):14604582211070300.
7. Osei E, Garcia M. Digital health literacy and competency standards for the nursing workforce. Nursing Outlook. 2022;70(6):870–879.
8. Tanaka K, Carter L. Framework design for nursing and midwifery digital health integration. International Journal of Medical Informatics. 2021;155(1):104571.
9. Park J, Singh P. Core competencies in nursing informatics for the Australian healthcare context. Studies in Health Technology and Informatics. 2022;290(1):327–334.