Chapter 7: Sustainability of Advanced Practice Nursing Education and Future Recommendations

Virpi Sulosaari, PhD, Executive Lecturer, Master School, Health and Well-being, Turku University of Applied Sciences, Finland
Magdalena Häger, PhD(c), Lecturer, Åland University of Applied Sciences, Finland
Johanna Heikkilä, PhD, Chief Advisor, Associate Professor, School of Health and Social Studies, Institute of Health, Jamk University of Applied Sciences, Finland

Introduction

An important part of developing Advanced Practice Nursing (APN) and education programmes preparing nurses for APN roles is aiming to sustain the APN roles, APN care models, and the education programmes. Thus, the APN roles, models of care, and education programmes also need to be adaptable to the changing needs of population health and health care systems. This chapter investigates the sustainability of APN education and provides future recommendations for maintaining relevance and promoting continual growth.

Keywords: advanced practice nursing, nurse practitioner, education, sustainability, curriculum development

Sustainability of Advanced Practice Nursing Roles and Programmes

Around 62% of countries now report formalised APN roles, up from 53% in 2020, with evidence showing APNs (including nurse practitioners and clinical nurse specialists) deliver care equal or superior to usual care across diverse settings, populations, and conditions (WHO, 2025). The WHO State of Nursing 2025 report identifies APN development as one of five emerging priorities (alongside the original 12 from 2021–2025), urging countries to further regulate, educate for, and deploy APN roles to optimise workforce contributions, improve service delivery, and support health equity. According to WHO (2025) national APN legislation and regulations need to be developed or updated for APNs to be able to practice to the full extent of their education and scope, with clear role definitions and titles and removal of unnecessary practice restrictions. To strengthen the APN education capacity, graduate-level programmes need to be aligned with ICN/WHO competency frameworks, with attention to clinical training capacity and faculty preparation.

Development and implementation of APN roles have the intention to provide better coverage and support to users of the health system, take advantage of APNs' intellectual capacity and expertise, and retain qualified professionals in the nursing profession. Development of APN has been seen as crucial for nursing worldwide (Lopes-Júnior, 2021). As highlighted in other chapters of the toolkit, APN roles can offer improved access to care, increased quality, and more timely care. However, despite the advantages of APN roles, there are still disparities among European

countries in implementing and sustaining APN roles (Unsworth et al., 2022; De Raeve et al., 2024). APN roles and education programmes are already established in many countries across the Nordic and Baltic regions of Europe (Sulosaari et al., 2023). Thus, development is at different stages in terms of how well APN roles have been integrated into health systems and how well APN education programmes are able to meet the needs of population health and health care provision in a sustainable manner.

APN role implementation is dependent upon a successful collaboration between health care systems, policy makers, professional bodies, leaders, managers, practitioners, and educators. Roles are developed and implemented through strong stakeholder engagement (De Raeve et al., 2024). Furthermore, education and healthcare systems are undergoing dynamic development, both dependently and independently of each other (Maier et al., 2016). Therefore, development of regulation, policy, and research should go hand in hand with the introduction and implementation of APN roles and education programmes preparing nurses for these roles. This would also support the sustainability of newly implemented APN roles and care models. Thus, the size of the APN workforce is dependent on several factors, including population health needs, care delivery models, and the total number of nurses within each country (Unsworth et al., 2022).

It needs to be recognized that the process of integrating the APN roles requires time and patience. The implementation process can take 10–20 years (Unsworth et al., 2022; Jokiniemi et al., 2014). This is also the case when introducing new APN programmes. It will take time for the programme to become well-known and attractive, and for nurses and their employers to see its potential in preparing nurses for extended roles in patient care. Recognising the importance of the relationships between nurse directors, service managers, and educators is key to the early development of these roles, but also in establishing the sustainability of the developed new roles and models of care. Moreover, the successful implementation of APN roles requires an extensive, in-depth assessment of population health needs and types of services, well-established educator networks, and collaborative bodies formed by practitioners, managers, and educators. Nursing leaders, managers, and practitioners can work with educators to develop APN roles, implement them, and identify appropriate outcomes to convince hospital management and policymakers of the value of advanced roles (Unsworth et al., 2022).

Against this backdrop of long-term system change and cross-sector collaboration, APN education must also anticipate emerging competencies, societal changes and increasing digitalisation in healthcare that will shape future practice. Emerging areas of advanced nursing practice include digital literacy, health literacy, the use of AI in nursing practice and planetary health.

Health literacy is crucial for achieving optimal health and is integral to nursing roles. Health literacy is one of the critical skills that nurses and patients must master to make informed decisions capable of impacting health outcomes. APNs can tackle global health issues such as chronic disease and health inequities. Health literacy and

patient education are emphasized as core strategies in APN-led models of care, including community-based and primary care settings (Mackavey, Henderson & Morris, 2025). Nurses play an essential role in promoting health literacy by disseminating relevant information. Nurses act as caregivers, facilitators, and educators to meet the needs of patients with limited health literacy and improve their health status. By understanding health literacy from a nursing perspective, nurses can apply this approach to address health problems and ultimately improve the quality of patient care. (Wilandika et al., 2023).

Artificial intelligence (AI) is increasingly embedded in healthcare and nursing. It is important for nurses not only to adapt AI technologies but also to actively shape their development, implementation, and governance to ensure alignment with nursing's core values of compassionate, patient-centred care. (Dornan, 2025). AI-based health technology has the potential to leverage the core clinical competencies of Nurse Practitioners (NP) in their work and clinical activities. There is a potential for increasing the effectiveness and safety of patient care provided by NPs (Raymond et al., 2022), enhancing patient care, clinical workflows, and nursing education (El Arab et al., 2025)

Thus, emphasis on fostering technical competencies and ethical decision-making skills among students and professionals is critical. AI literacy programs to prepare nurses for a technologically advanced health care landscape are needed (El Arab et al. 2026). In his commentary, Dornan (2025) proposes a five-part APDDS framework that encapsulates the essential domains of action - nurses must be aware, prepare, dare, declare, and share. The framework provides a structured approach for understanding and operationalising nursing's role in an AI-enabled future.

Planetary health is an emerging area in advanced practice nursing, encompassing environmental aspect and a board approach to sustainability in healthcare. The European Federation of Nurses Associations (2022) "Nursing Planetary Health" policy statement calls on nurses in advanced roles to lead planetary health actions, co-design solutions, and implement planetary health approaches in healthcare, community, and public health interventions, linking these actions to the EU Green Deal. Green competence and environmental awareness relate to sustainable nursing practice and stress the need for management support and green programmes, spaces where APNs and nurse leaders can drive implementation (Attia et al., 2025). Vanderberg et al. (2025) call for action from nurses to advance planetary health in education, practice, research, and advocacy, and highlight leadership and advocacy roles that align well with advanced practice profiles, Nurses in senior and expanded roles are pivotal in leading value-based, sustainable practice changes in the future (Ward et al., 2025).

Future recommendations:

- Sustainability in Advanced Practice Nursing and APN programmes requires close cooperation among health care systems, policy makers, professional bodies, leaders, managers, practitioners, and educators;
- Health care service and population health needs assessment is the foundation on establishing new programmes and evaluation of the existing programmes;
- Locally advisory groups could be established to ensure the APN programmes are respond to the needs of population health and health care services. These groups should include practitioners, managers, and educators;
- Stay updated on recent developments in nursing and health care to ensure alignment with curriculum development;
- The Nordic and Baltic countries are in different stages of development of APN programmes. Therefore, collaboration between the higher education institutions and among the APN educators is needed.

References

Attia, N. M., Hamed, A. E. M., Elbakry, M. A. A. E., Barakat, A. M., & Mohamed, H. S. (2025). Navigating sustainable practice: Environmental awareness and climate change as mediators of green competence of nurses. *BMC Nursing, 24*(1), 658. https://doi.org/10.1186/s12912-025-03313-4

De Raeve, P., Davidson, P. M., Bergs, J., Patch, M., Jack, S. M., Castro-Ayala, A., Xyrichis, A., & Preston, W. (2024). Advanced practice nursing in Europe: Results from a pan-European survey of 35 countries. *Journal of Advanced Nursing, 80*(1), 377–386. https://doi.org/10.1111/jan.15775

Dornan, M. (2025). Every nurse an AI nurse: A framework for integrating artificial intelligence across nursing practice, education, research and policy. *Digital Health, 11*. https://doi.org/10.1177/20552076251377939

El Arab, R., Al Moosa, O., Abuadas, F., & Somerville, J. (2025). The role of AI in nursing education and practice: Umbrella review. *Journal of Medical Internet Research, 27*, e69881. https://doi.org/10.2196/69881

European Federation of Nurses Associations. (2022). *Nursing planetary health*. https://efn.eu/?p=15281

Jokiniemi, K., Haatainen, K., Meretoja, R., & Pietilä, A.-M. (2014). Advanced practice nursing roles: The phases of the successful role implementation process. *International Journal of Caring Sciences, 7*(3), 946–954.

Lopes-Júnior, L. C. (2021). Advanced practice nursing and the expansion of the role of nurses in primary health care in the Americas. *SAGE Open Nursing, 7*. https://doi.org/10.1177/23779608211019491

Mackavey, C., Henderson, C., & Morris, G. (2025). Empowering advanced practice nurses: A review of addressing global health needs. *Annals of Global Health, 91*(1), 45. https://doi.org/10.5334/aogh.4723

Maier, C. B., & Aiken, L. H. (2016). Task shifting from physicians to nurses in primary care in 39 countries: A cross-country comparative study. *European Journal of Public Health, 26*(6), 927–934. https://doi.org/10.1093/eurpub/ckw098

Raymond, L., Castonguay, A., Doyon, O., & Paré, G. (2022). Nurse practitioners' involvement and experience with AI-based health technologies: A systematic review. *Applied Nursing Research, 66*, 151604. https://doi.org/10.1016/j.apnr.2022.151604

Sulosaari, V., Blaževičienė, A., Bragadóttir, H., Bäckström, J., Heikkilä, J., Hellesø, R., Hopia, H., Lenk-Adusoo, M., Norlyk, A., & Urban, R. (2023). A comparative review of advanced practice nurse programmes in the Nordic and Baltic countries. *Nurse Education Today, 127*, 105847. https://doi.org/10.1016/j.nedt.2023.105847

Unsworth, J., Greene, K., Ali, P., Lillebø, G., & Mazilu, D. C. (2022). Advanced practice nurse roles in Europe: Implementation challenges, progress and lessons learnt. *International Nursing Review*. Advance online publication. https://doi.org/10.1111/inr.12800

Vandenberg, S., Oosterbroek, T., Chircop, A., & Kellett, P. (2025). Planetary health: A pragmatic theoretical framework to guide nursing education, research, and practice. *Nurse Education Today, 153*. https://doi.org/10.1016/j.nedt.2025.106808

Ward, A., Charalambous, J., Antoniou, C., East, L., Moroney, T., & Levett-Jones, T. (2025). Planetary health and nursing: Embedding values into standards, behaviours, and education. *Nurse Education Today, 153*. https://doi.org/10.1016/j.nedt.2025.106806

World Health Organization. (2025). *State of the world's nursing 2025: Investing in education, jobs, leadership and service delivery*. https://www.who.in