

Advancements in Nursing Practices: Bridging Evidence-Based Care and Clinical Innovation

Faten Mohammed Alenazi¹, Saja Mohammed Alsaedi², Aziza Mohammed Alsultan³, Wafa Ali Alfareed⁴, Haya Mubarak Saleem Alotaibi⁵, Malak Ramadan Alenizi⁶, Noha Abdullah Bin Rashood⁷, Mazzyounah Hassan Aldossarry⁸, Soso Mohammed Rashid Al Masoud⁹, Eman Hamad Bin Ali¹⁰, Mohammed Salah Albalawi¹¹, Abdullallah Amer Alenezy¹²

¹Nursing, Asir Health Cluster - Alnmas Sector

² Nursing, Specialized Psychiatry Hospital - King Salman Medical City

³ Nursing, Dahran eye specialist hospital

⁴ Nursing, Dahran Eye Specialist Hospital

⁵ Nursing, Dawadmi General Hospital

⁶ Nursing, Committee of Private Healthcare Institution Compliance - Ministry of Health, Riyadh Region Branch (2024)

⁷ Nursing, Committee of Private Healthcare Institution Compliance - Ministry of Health, Riyadh Region Branch (2024)

⁸ Nursing Technician, Committee of Private Healthcare Institution Compliance - Ministry of Health, Riyadh Region Branch (2024)

⁹ Nursing Technician, Al Khobar Health Network

¹⁰ Nursing, Maternity and Children Hospital in Dammam

¹¹ Nursing Administration, Ministry of Health - King Fahd Hospital, Almadina Almunawrah

¹² Nursing, Financial Management - Branch of the Ministry of Health, Riyadh Region (2024)

Received: 05.09.2024

Revised: 25.09.2024

Accepted: 30.09.2024

ABSTRACT

Healthcare has experienced substantial transformations in recent decades to integrate new technology and address the changing demands of individuals and the community. This transition has supplanted conventional approaches such as prescription papers and patient charts with digital displays and software. The implementation of these improvements has positively influenced patient outcomes and increased the number of lives saved. Healthcare, including nursing, is undergoing dramatic changes due to the integration of artificial intelligence (AI) and robotic technologies. Digital technologies exert a significant global impact on nursing, highlighting the necessity for nurses to thrive in both clinical and technology domains. Virtual reality (VR) is a simulation modality that employs sophisticated technology and augmented reality (AR) enhancements. Virtual reality simulations provide nursing students with a significant chance to perform high-risk interventions on virtual patients, enabling them to acquire experience without jeopardizing patient safety.

Keywords: Nursing Practices; Evidence-Based Care; Clinical Innovation

INTRODUCTION

Nurse responsibilities are evolving in each country to address the requirements of hospitals and primary care. Generalist and specialty advanced practice nurses operate in primary care settings, communities, hospitals, and long-term care facilities. They assist the destitute, elderly, marginalized individuals, women, children, and those with chronic illnesses. Global advanced nursing is contingent upon the status of nursing and women, the demand for healthcare, health policy and resources, and the physician-to-nurse ratio. Despite variations in APN evolution among countries, commonalities are present. The difficulties include educational standards, regulation, titling, reimbursement, prescription authority, and clarification of area of practice. Nurses, like with other professions and the general public, frequently resist and misconstrue the role. Advanced-practice nurses can formulate policies, enhance education, and promote professional development to meet population needs during the global health care crisis(1). Augmented reality holds significant promise in the field of education, particularly in medical and nursing training. This arises from its unique ability to merge virtual elements with the physical environment, hence enhancing simulations and promoting a more genuine and immersive teaching

experience. Augmented Reality (AR) can revolutionize medical and nursing education by integrating virtual elements into users' physical surroundings, providing them with immersive training experiences that closely resemble real-life scenarios. This technology can enhance understanding and retention of complex medical and nursing ideas, improve diagnostic skills, and facilitate practical learning in a safe and controlled environment. The integration of augmented reality in medical and nursing education has the potential to substantially improve student learning and ultimately progress healthcare. Computer-assisted procedures and operations have solidified their significance in the healthcare sector. As robotic surgery gains prominence, physicians must refine and sustain their skills while prioritizing patient safety. Robotic surgery has several advantages, including accelerated recovery times, reduced complication rates, minimized blood loss, and restoration of site-specific functioning(3).

Furthermore, telemedicine and health informatics have achieved extensive adoption in the healthcare sector, enabling the remote delivery of many healthcare services. Telehealth include remote patient monitoring, interventions, education, patient follow-ups, data collection, pain management, and innovative care approaches. Nurses are increasingly involved in telehealth through telephone triage, utilizing electronic information and communication technologies to provide healthcare support to those who are geographically distant. Nurses employ telehealth to improve long-term wellness, self-management, and remote healthcare for patients by providing consultations and treatments through digital platforms. Health informatics is the application of information technologies in the healthcare sector to enhance healthcare delivery and overall population health. Technological advancements have improved the collection, processing, and utilization of healthcare data. In nursing practice, informatics has significantly impacted documentation. Traditional methods such as paper charts and handwritten notes have been replaced by easily accessible electronic health records and other technology that store and update patients' medical histories. Nurses can acquire information through electronic charting to improve patient care. Moreover, these medical records are available to all healthcare providers involved in the patient's care, both within and outside the institution. Health informatics assists nurses in providing optimal care by tracking staff shortages, optimizing workflows, and improving team communication to enhance processes and reduce stress. Determining the most effective evidence-based practices requires the utilization of health informatics, as the evaluation of collected data on patient care and outcomes facilitates the establishment of optimal treatment for future patients. The advancement of digital health impacts the future of the healthcare industry(4). Advanced nursing practice specifies the duties and roles of nurses in their positions. Although a unique definition is lacking, there is agreement that advanced nursing practice expands the traditional nursing scope, involves substantial autonomy, enhances the application of nursing knowledge, and contributes to the progression of the profession. An essential function of advanced nursing practice is serving as a change agent, which involves collaboration and consultation with healthcare professionals and decision-makers. Advanced practice refers to advanced nursing practice and should not be confused with advanced clinical practice, which is only related to patient care (6). Numerous models concur that clinical practice is the primary focus of advanced nursing practice (6,7). Advanced nursing practice includes many role domains related to education, research, professional development, and organizational leadership. The definition of role domains varies among advanced nursing practice models. Eight sub-roles have been delineated, spanning direct and indirect expert practice, education, research, and consultation for the advanced practitioner/consultant nurse. Proficiency in transformational leadership, collaboration, and organizational development was essential for executing the sub-roles. The Synergy Model outlines eight domains of practice for clinical nurse specialists (9). The characteristics of roles related to clinical judgment, clinical inquiry, pedagogy, collaboration, systems thinking, advocacy/moral agency, compassionate practices, and responsiveness to diversity impact three areas of influence: patient/family, nursing, and health systems. The Strong Model outlines five domains for acute care nurse practitioner roles: direct comprehensive care, systems support, education, research, publication, and professional leadership. Each domain includes specific elements that cater to the unique needs of patients, practitioners, academia, and systems relevant to diverse practice environments. Advanced nursing practice is distinguished from basic nursing practice by three characteristics: specialization in the care of specific patient populations with complex, unpredictable, and/or intensive health needs; expansion through the acquisition of new knowledge, skills, and role autonomy beyond traditional nursing scopes; and advancement, which encompasses both specialization and expansion. The amalgamation of theoretical, research-oriented, and practical knowledge inherent in graduate nursing education constitutes a thorough definition of advancement (10).

Innovation, practice orientation, and the synthesis of information and skills exemplify implicit qualities. Professional pursuits that improve nursing care (11) or facilitate the development of novel nursing knowledge (12) are deemed innovative. Evaluating nursing interventions, enhancing the nursing role in new care delivery models, and advocating for modifications to health care policy and procedures exemplify professional behaviors. Innovation and the advancement of nursing practice cannot occur without a commitment to the fundamental principles of the profession. These concepts encompass a patient-centered, health-oriented, and holistic approach to nursing practice.

Advancement involves intentional actions to enhance patient health through the integration of knowledge and skills related to clinical practice, education, research, professional development, and organizational leadership (12). The amalgamation of role domains is termed the "synthesis" of abilities by Davies and Hughes. The ability to assimilate and utilize this extensive array of knowledge indicates that advancement requires more than mere experiential proficiency; it necessitates a significant level of critical thinking and analysis (12). Moreover, progress occurs when the several advanced nursing practice job areas collaborate to form a cohesive entity that surpasses the aggregate of its individual components. Consequently, advanced clinical practice is interconnected with other domains of responsibilities(13). Without the direction and guidance of information and actions from other job domains to enhance patient care, the acquisition of specialized knowledge or the expansion of clinical skills does not constitute advanced practice. Consequently, enlarged yet not advanced nursing practice is characterized by roles that extend beyond traditional nursing boundaries but are solely aimed at providing clinical care. Refined technique Nursing encompasses the entire domain of a specific nursing profession(14). Describe APN as a pyramid. The goal or peak of APN activity is advanced nursing practice, which is promoted at the base by environmental factors. APN incorporates advanced nursing practice even if it extends beyond what is known in this field. Advanced practice nursing (APN) is the discipline comprising a range of advanced practice nurse (APN) positions, their settings and interactions, the structures and tools supporting advanced nursing practice, and environmental factors influencing the nature and objectives of APN roles. Advanced practice nursing refers to a number of roles in which nurses function at a level of advanced practice (15). Nations such as the United States, where laws, regulations, and protected titles for clinical nurse specialists, nurse midwives, nurse anaesthetists, and nurse practitioners exist, have less difficulty segregating APN tasks. Still, most countries lack protected titles and there is no global consensus on the use of titles to set APN positions. Role confusion develops when the same title—that of a nursing specialist—is used for many roles with different purposes, educational preparation, and scopes of practice—all of which have different meanings (16). Role competencies involving fields of advanced nursing practice linked to clinical practice, education, research, organizational leadership, and professional development provide better markers of APN roles than role titles alone. Consensus is developing that APN duties (15) demand for graduate education along with practical experience. From a strictly clinical perspective, the concept of evidence-based practice in nursing has evolved into a more comprehensive approach that fairly covers the complete spectrum of nursing research and practice. It is clear in theoretical development and undergraduate and graduate nursing education as well as in the acceptance of clinical practice. Evidence-based practice in nursing is defined by the International Council of Nurses as "a problem-solving approach to clinical decision-making that integrates the latest evidence, clinical expertise, and patient preferences inside a caring context." Evidence-based practice, according to the 2002 Canadian Nurses Association, depends on decision-making to improve patient outcomes, hone clinical practice, and maintain nursing accountability. Examining three vignettes that helped the definition of evidence-based practice to be revised, (18) invited several registered nurses (RNs) experienced in the execution of evidence-based practice in a project in Hong Kong. French underlines the important feature of using tacit knowledge to implement evidence-based practice. French defines tacit knowledge as knowledge lacking in literature but yet extensively acknowledged and used in the nursing field. French enlarged the definition of evidence-based practice to include "[a focus] on the integration of available evidence and the investigator's tacit knowledge." Though the concept of tacit knowledge drives nurses to use past research and experience, guided by contextual factors, into their practice, this definition is imprecise. Different interpretations of evidence-based practice stem from Sackett's idea developed in the 1990s (19). It is now widely accepted that improving patient outcomes and healthcare quality requires evidence-based practice. A growing number of studies have been conducted to help effectively translate evidence into practice, despite the seeming disparities between the goals of evidence-based nursing practice (using the best evidence in nursing) and nursing research (generating new knowledge). To achieve significant benefits, research evidence (effective innovation) needs to be combined with successful implementation and a supportive environment. "Nursing science must include all types of research, ranging from discovery to translation, from bench to bedside, and from mechanistic to holistic," according to Professor Rita Pickler (20). Within the context of the healthcare system, a great deal of attention has been paid to enhancing the quality of healthcare services, patient safety results, and cost control (21, 22). As a result, Evidence-Based Practice (EBP), which was found to be essential to promoting healthcare excellence, received more attention (23, 24). In order to make a therapeutic decision that could affect patient care in certain circumstances, EBP is defined as a methodical process of evaluating the best available scientific data from research and clinical experience, incorporating patient interests, beliefs, expectations, and requirements (25, 26). EBP has become the most popular care model and a helpful framework for facilitating the application of research findings in clinical practice (27). Similarly, there is a growing body of research on implementing Quality Improvement (QI) projects as a crucial requirement inside health care organizations. Nevertheless, little is known about the factors that influence QI performance in hospitals. Health care services will be of higher quality if hospitals have and maintain the skills and knowledge required for QI (28). All healthcare professions agree that putting EBP and QI into practice is essential. Quality improvement, clinical research, and evidence-

based practice are separate but related fields of study (29, 30). Systematic, information-driven, change-focused initiatives to enhance healthcare are known as quality improvement (QI) [23]. While clinical research provides empirical evidence for EBP (10), QI was found to be a critical contextual organizational factor for EBP adoption and can be used to validate the introduction of EBPs (23). This is in spite of the fact that EBP was thought to be the gold standard and a problem-solving approach to providing safe and high-quality patient care (25). To significantly improve the quality of healthcare, evidence-based practice, or EBP, must be put into practice. Healthcare professionals are susceptible to care variation in the absence of EBP, which could have serious repercussions for patient outcomes (31). Despite recommendations and commercial pressure, the inconsistent application of research findings into clinical practice persists, and the discrepancy between research evidence and EBP is frequently noted (32). Additionally, there aren't many empirical studies that look at EBP in connection to QI (24). At the point of patient encounter, evidence-based practice is still not always applied consistently.(33, 36, 38). One major and urgent challenge is the effective design and implementation of professional education to support evidence-based practice.(33, 34, 37, 39) Research that can provide direction and structure to advance in this area should be pursued in order to continue improving EBP education. As part of a national initiative assessing the existing practices and provisions of Evidence-Based Practice (EBP) education across healthcare professions at undergraduate, postgraduate, and continuing professional development levels, we sought perspectives from international EBP education experts on the implementation of EBP education for healthcare professionals. The remaining elements of this study, namely a rapid review synthesis of evidence-based practice literature and a descriptive, cross-sectional, national online survey concerning the current delivery and implementation of evidence-based practice education for healthcare professionals at tertiary institutions and professional training/regulatory bodies in Ireland, will be elaborated upon in forthcoming publications.

A crucial element in providing safe and evidence-based patient care is the capacity to obtain comprehensive information via mobile devices (40). Nursing educators teach students to utilize these tools to promote evidence-based reasoning in clinical practice (41). Barriers to the execution of evidence-based practice in clinical environments, impacting both registered nurses and students, comprise inadequate wifi connectivity and a lack of awareness of relevant and current research findings. 40 Mobile technologies provide the immediate implementation of current research at the site of care. In addition to tackling the issue of accessibility, mobile technology can enhance the relevance of this knowledge. Doran et al. (2010) conducted a study evaluating the impact of mobile technology, including personal digital assistants, on the facilitation and implementation of evidence-based practice among nursing professionals. Doran et al. discovered that when equipped with the necessary tools (i.e., cellphones), nurses exhibited a greater propensity to access resources related to pharmaceutical and medical information, as well as best practice guidelines. Mobile technologies facilitate access to evidence-based practice resources, which is especially crucial for rookie nurses and nursing students acquiring fundamental skills. The Registered Nurses' Association of Ontario supports online access to implementation toolkits for best practice recommendations, providing guidance for both organizations and individuals. The Registered Nurses Association of Ontario provides a smartphone application that enables swift access to a searchable online database of best practice standards literature. When a nurse is deficient in confidence regarding the use of these technology resources, a recommended strategy by the Canadian Nurses Association (CNA) is an evidence-based practice mentorship program. The American Association of Colleges of Nursing provides comprehensive assistance to Bachelor of Science in Nursing-prepared Registered Nurses regarding nursing research, pedagogy, and evidence-based practice. The document Evidence-Based Practice provides registered nurses with explicit criteria for the implementation of evidence-based practices, as well as approaches relevant to clinical environments. Registered nurses can obtain instruction and mentorship in employing technology that enhance their practice through programs and support systems.

CONCLUSION

It's easier to see how technology is changing in healthcare settings. When information and communication technologies (ICTs) are used in health care, they have huge benefits. They can support healthcare that is focused on the patient, raise the standard of care, and teach both patients and health professionals. Putting ICTs into use is hard and causes patients, healthcare workers, and healthcare organizations to change. As a whole, nurses make up the largest group of health care workers. ICTs are becoming more popular among health workers as a way to provide better care. Some nurses may change how they plan, give, record, and review professional care when they use ICTs in their work. This piece talks about new ICT developments in nursing.

REFERENCES

1. Sheer, B., & Wong, F. K. Y. (2008). The development of advanced nursing practice globally. *Journal of Nursing Scholarship*, 40(3), 204-211.
2. Jonathan, S. (2025). Nursing in the digital age: the importance of health technology and its advancement in nursing and healthcare. In *Digital Technology in Public Health and Rehabilitation Care* (pp. 283-296).

- Academic Press.
3. Williams, J. K., Katapodi, M. C., Starkweather, A., Badzek, L., Cashion, A. K., Coleman, B., ... & Hickey, K. T. (2016). Advanced nursing practice and research contributions to precision medicine. *Nursing outlook*, 64(2), 117-123.
 4. Buran, C., & Tosun, B. (2024). Advancements in Nursing Practices Diversity: A Bibliometric Analysis. *Sağlıkta Performans ve Kalite Dergisi*, 21(2), 29-44.
 5. Castledine G. (2002) Higher level practice is in fact advanced practice. *British Journal of Nursing* 11, 1166–1167.
 6. Brown S. (1998) A framework for advanced practice nursing. *Journal of Professional Nursing* 14, 157–164.
 7. Hamric A. (2000) A definition of advanced nursing practice. In *Advanced Nursing Practice: An Integrative Approach* (A.B. Hamric, J.A. Spross & C.M. Hanson, eds), W.B. Saunders, Philadelphia, pp. 53–73.
 8. Manley K. (1997). A conceptual framework for advanced practice: an action research project Operationalizing an advanced practitioner/consultant nurse role. *Journal of Clinical Nursing* 6, 179–190.
 9. Moloney-Harmon P.A. (1999) The synergy model in practice. *Critical Care Nurse* 19, 101–104.
 10. ANA (1995b) Nursing's Social Policy Statement. American Nurses Association, Washington, DC, USA.
 11. Davies B. & Hughes A.M. (1995) Clarification of advanced nursing practice: characteristics and competencies. *Clinical Nurse Specialist* 9, 156–160.
 12. McGee P. & Castledine G. (2003) *Advanced Nursing Practice*, 2nd edn. Blackwell, Oxford.
 13. Hamric A. (2000) A definition of advanced nursing practice. In *Advanced Nursing Practice: An Integrative Approach* (A.B. Hamric, J.A. Spross & C.M. Hanson, eds), W.B. Saunders, Philadelphia, pp. 53–73.
 14. Styles M. & Lewis C. (2000) Conceptualizations of advanced nursing practice. In *Advanced Nursing Practice: An Integrative Approach* (A.B. Hamric, J.A. Spross & C.M. Hanson, eds), W.B. Saunders, Philadelphia, pp. 33–51.
 15. Aljasser, M. S., Almutairi, A. M., Jawir, T. S. B., Alallawi, R. H., Hawswai, H. M., & Alzid, A. A. (2022). ROLES FOR ADVANCED PRACTICE NURSES: CREATION, APPLICATION, AND ASSESSMENT ROLES IN ADVANCED PRACTICE NURSING. *Chelonian Research Foundation*, 17(2), 1744-1758.
 16. Whyte S. (2000) Specialist nurses in Australia: the ICN and international regulation. *Journal of the professional nurse* 16, 210–218.
 17. Stevens, K. (2013). The impact of evidence-based practice in nursing and the next big ideas. *The Online Journal of Issues in Nursing*, 18
 18. French, P. (1999). The development of evidence-based nursing. *Journal of Advanced Nursing*, 29, 72–78
 19. Beyea, S. C. & Slattery, M. J. (2013). Historical perspectives on evidence-based nursing. *Nursing Science Quarterly*, 26, 152–155
 20. Pickler R. H. (2018). Honoring the past, pursuing the future. *Nursing Research*, 67(1), 1–2. 10.1097/NNR.0000000000000255
 21. Hadgu S, Almaz S, Tsehay S. Assessment of nurses' perceptions and barriers on evidence-based practice In TikurAnbessa Specialized Hospital Addis Ababa Ethiopia. *Am J Nurs* 2015; 4(3): 73-83.
 22. Boström AM, Rudman A, Ehrenberg A, Gustavsson JP, Wallin L. Factors associated with evidence-based practice among registered nurses in Sweden: A national cross-sectional study. *BMC Health Serv Res* 2013; 13: 165.
 23. Shirey MR, Hauck SL, Embree JL. Showcasing differences between quality improvement, EBP, and research. *J Contin Educ Nurs* 2011; 42(2): 57-68
 24. Hwang JI, Park HA. Relationships between EBP, quality improvement and clinical error experience of nurses in Korean hospitals. *JNM* 2015; 23: 651-60.
 25. Melnyk BM, Fineout-Overholt E. *EBP in nursing and healthcare: A Guide to best practice* 2nd ed. 2011.
 26. Melnyk BM, Fineout-Overholt E, Gallagher-Ford L. The state of EBP in US nurses: Critical implications for nurse leaders and educators. *JONA* 2012; 42(9): 410-7.
 27. Shifaza F, Evans D, Bradley H. Nurses' perceptions of barriers and facilitators to implement EBP in the Maldives. *ANS Adv Nurs Sci* 2014; 1: 1-7.
 28. Hussein H A, Abou Hashish AE. Work environment and its relationship to quality improvement. *J Nurs Care Qual* 2016; 31(3): 290-8.
 29. Solomons NM, Spross JA. EBP Barriers and facilitators from a continuous quality improvement perspective: An integrative review. *JNM* 2011; 19: 109-20.
 30. Conner BT. Differentiating research, EBP, and quality improvement. *Am Nurse Today* 2014; 9(6): 1-4.
 31. 2016. <https://www.beckershospitalreview.com/quality/evidence-based-practice-the-key-to-advancing-quality-and-safety-in-healthcare.html>
 32. Ellen ME, Léon G, Bouchard G, Ouimet M, Grimshaw JM, Lavis JN. Barriers, facilitators and views

- about next steps to implementing supports for evidence-informed decision-making in health systems: A qualitative study. *Implement Sci* 2014; 9(1): 179.
33. Dawes M , Summerskill W , Glasziou P , et al . Sicily statement on evidence-based practice. *BMC Med Educ* 2005;5:1–5.doi:10.1186/1472-6920-5-1
 34. Thomas A , Saroyan A , Dauphinee WD . Evidence-based practice: a review of theoretical assumptions and effectiveness of teaching and assessment interventions in health professions. *Adv Health Sci Educ Theory Pract* 2011;16:253–76.doi:10.1007/s10459-010-9251-6
 35. Thangaratinam S ,Barnfield G , Weinbrenner S , et al . Teaching trainers to incorporate evidence-based medicine (EBM) teaching in clinical practice: the EU-EBM project. *BMC Med Educ* 2009;9:1–8.doi:10.1186/1472-6920-9-59
 36. Barends E , Briner R . Teaching evidence-based practice: lessons from the pioneers: an interview with amanda burls and gordonguyatt. *Academy of Management Learning and Education* 2014;13:476–83.
 37. Hitch D , Nicola-Richmond K . Instructional practices for evidence-based practice with pre-registration allied health students: a review of recent research and developments. *Adv Health Sci Educ Theory Pract* 2017;22:1031–45.doi:10.1007/s10459-016-9702-9
 38. Zeleníková R , Beach M , Ren D , et al . Faculty perception of the effectiveness of EBP courses for graduate nursing students. *Worldviews Evid Based Nurs* 2014;11:401–13.doi:10.1111/wvn.12068
 39. Aglen B. Pedagogical strategies to teach bachelor students evidence-based practice: A systematic review. *Nurse Educ Today* 2016;36:255–63.doi:10.1016/j.nedt.2015.08.025
 40. Kanda, Y. Investigation of the freely available easy-to-use software 'EZR' for medical statistics. *Bone Marrow Transplant* 48, 452–458 (2013). <https://doi.org/10.1038/bmt.2012.244>
 41. Raman, J. (2015). Mobile technology in nursing education: Where do we go from here? A review of the literature. *Nurse Education Today*, 35, 663–672 (Retrieved from) [http://www.nurseeducationtoday.com/article/S0260-6917\(15\)00049-0/pdf](http://www.nurseeducationtoday.com/article/S0260-6917(15)00049-0/pdf). Registered Nurses' Association of Ontario. Implementation resources. (n.d. Retrieved from) <http://rnao.ca/bpg/implementation-resources>.