Volume 4, Issue 3, 2026

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

DIGITAL LITERACY IN NURSING EDUCATION IN PAKISTAN: EMPOWERING NURSES FOR A FUTURE-READY HEALTHCARE SYSTEM

Mrs. Fareeha Naz[1], Farman Ullah Khan[2], Ahmad Yar*[3], Shakir Ullah[4], Kamran Khan[5], Abbas Khan[6]

[1,2]*MSN, MPH, BSN Assistant Professor SUIT Peshawar Pakistan*
[*3]*MSN, BSN Assistant Professor RMI Peshawar Pakistan*
[4]*BSN RN KGN Bannu Pakistan*
[5]*BSN RN at RNH&CC Rawalpindi Pakistan*
[6]*Assistant Professor Nursing Gandahara University Peshawar Pakistan*

[1]fareeha.ins@suit.edu.pk, [2]khanfarmanullah56@gmail.com, [*3]ahmadyar.ins@suit.edu.pk, [4]shakirayazmarwat@gmail.com, [5]kkamran7676@gmail.com, [6]abbasdaudzai193@gmail.com

DOI:https://doi.org/10.5281/zenodo.22745856

Keywords
Digital literacy, Nursin education; Digital healt Electronic health record Telehealth, Nursing students

Article History
Received: 01 January 2026
Accepted: 17 March 2026
Published: 31 March 2026

Copyright @Author

Corresponding Author: *
Ahmad Yar,

Abstract

Background:
Digital literacy in nursing refers to the ability to access, evaluate, and use digital too and technologies effectively for clinical, educational, and administrative purposes. I Pakistan, the integration of digital technologies into nursing education is emergin, with electronic health records (EHRs), learning management systems (LMS), virtu simulation, blended learning, telehealth, and artificial intelligence creating ne opportunities to strengthen nursing education and clinical preparedness.

Aim/Objective:
This paper aims to examine the significance of digital literacy in nursing education i Pakistan.

Method:
A narrative and evidence-based review of the available literature and existir developments related to digital literacy in nursing education was undertaken.

Conclusion:
Digital literacy should be recognized as a core professional competency rather tha merely a technical skill in contemporary nursing education. Developing digital empowered nurses can contribute substantially to a resilient, connected, evidenc informed, and future-ready healthcare workforce in Pakistan.

INTRODUCTION

Digitally Literate Nurses: Empowering the Future of Nursing Education in Pakistan

In the modern world, the integration of digital technologies into nursing education is no longer optional; it is essential. As healthcare systems become more complex and dependent on digital platforms, nurses must be digitally literate to effectively contribute to patient care, education, and health system improvement. In Pakistan, where healthcare demands are growing, preparing nurses with digital competencies has the potential to transform both education and clinical practice. Aga Khan University and Shifa Tameer-e-Millat University are initiating early advancements in digital innovation, and the future of nursing education in Pakistan is positioned for significant transformation through the integration of digital technologies.

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Digital literacy in nursing refers to the ability to access, evaluate, and use digital tools and technologies effectively for clinical, educational, and administrative purposes. It encompasses skills such as navigating electronic health records (EHRs), participating in virtual simulations, using learning management systems (LMS), utilizing telehealth platforms, and adhering to cybersecurity and data privacy principles (Harerimana et al., 2022). Unlike general computer literacy, digital literacy in healthcare is relative, focusing on how digital tools are applied to enhance nursing roles and improve patient outcomes. The World Health Organization (2021) underscores digital literacy as a strategic priority in healthcare transformation, particularly in low- and middle-income countries like Pakistan. It is a cornerstone for preparing nurses to work in a digitally enabled environment, deliver safe care, and adapt to new technologies.

Globally, countries have embedded digital literacy into nursing curricula. For example, the United Kingdom's digital literacy framework for health and care outlines essential digital capabilities for healthcare professionals, including information governance, digital collaborations, and clinical data analysis(NHS Health Education England, 2020).In Pakistan, digital literacy is still an emerging area in nursing education. However, with institutions like AKU and STMU implementing digital tools for instruction and simulation, significant progress is being made. Aga KhanUuiversitys center for Innovation in Medical Education (CIME)provides high tech simulation environment where nurses can practice clinical skills using digital patient scenarios and multimedia learning resources (Aga KhanUuiversity,2023)Similarly, Shifa Tameer-e-Millat University(2022) has incorporated e-learning platforms, blended learning, and virtual classrooms to facilitate remote access to nursing education Learning Management Systems(LMS) such as Moodle and Canvas are increasingly used in nursing schools to enhance course delivery, assessment, and feedback. These platforms enable educators to personalize learning materials, monitor students' progress, and design interactive content, as evidenced by institutions like The University of Health Sciences and Zia Uddin University in Pakistan, which adopted LMS for asynchronous learning during the COVID-19 pandemic. Additionally, simulation-based skill development using manikins and virtual reality offers hands-on clinical experience in a risk-free environment, significantly enhancing students' critical thinking, clinical reasoning, and decision-making abilities (Foronda et al., 2020). Electronic Health Records (EHRs) are considered updated versions of patients' medical records that contain all their health-related information, including medical history, diagnosis, medications, laboratory results, and radiology reports. Electronic Health Record handling is also crucial for nurses to provide safe and evidence-based care(Javeed, 2023). In Pakistan, Aga Khan University (AKU) has taken the lead in integrating Electronic Health Record (EHR) training into nursing education through its School of Nursing and Midwifery. Its Advanced Practice Nursing program, endorsed by the Pakistan Nursing Council, includes components related to EHR use(AKU,2023). Similarly, the Indus Hospital & Health Network has supported the promotion of EHRs by organizing national conferences focused on the implementation of digital healthcare systems(Indus Hospital & Health Network, 2023). Moreover, digital literacy prepares nurses to engage in telehealth services, facilitating remote consultations, patient education, and chronic disease management, which is particularly beneficial in Pakistan's underserved regions where mobile device usage is on the rise. Finally, digitally literate nurses can pursue continuous professional development through online learning platforms, participate in virtual academic forums, and conduct research using databases like PubMed, CINAHL, and Scopus, thereby staying current with global healthcare advancements.

Despite the recognized benefits of digital literacy, several challenges hinder its effective integration into nursing education in Pakistan. A significant barrier is inadequate infrastructure, as many institutions, particularly in rural areas, lack access to high-speed internet, updated computer systems, and advanced simulation tools essential for digital learning (Zahoor, 2023). Additionally, limited faculty training poses a critical challenge; many educators were trained before the digital era and possess limited familiarity with contemporary

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

educational technologies, resulting in inconsistent application of digital pedagogies. Resistance to change further complicates adoption efforts, with cultural norms and institutional inertia slowing the transition to a technology-enhanced learning environment, especially in conservative or under-resourced settings. Furthermore, the Pakistan Nursing Council's curriculum does not currently include comprehensive digital literacy competencies as core learning outcomes, creating a disconnect between educational standards and evolving healthcare needs. The urban-rural digital divide also persists, with students in remote regions facing limited access to digital devices, technical support, and stable electricity, thereby widening educational disparities and hindering the equitable advancement of digital literacy across the nursing workforce.

Institutions like AKU are actively addressing these challenges. AKU's digital learning strategy includes faculty training programs, blended course design, and the incorporation of digital competencies in nursing curricula. CIME (Centre for Innovation in Medical Education) has trained hundreds of educators and students in digital tool usage, simulation, and instructional design. Similarly, Shifa Tameer e Millat University offers blended learning courses and uses digital platforms for clinical skill assessment and case-based discussion. They also partner with international institutions to integrate global best practices in digital education. Sarhad University of Information Science and Technology has also taken a significant initiative by incorporating Artificial Intelligence and Machine Learning as a subject in its master's degree program in nursing. This development is a progressive step, as it will prepare future nurse educators with essential knowledge of emerging digital technologies. Familiarity with these tools will enable them to integrate digital innovations into their teaching practices, thereby enhancing the quality of nursing education they deliver to their students.

Recommendation

Curricula should include core digital competencies such as EHR use, telehealth, and cybersecurity to promote digital empowerment in nursing education. Faculty training in digital pedagogy must be mandated, and infrastructure investment must be prioritized, especially in underserved areas. Additionally, validated tools should be used to assess digital literacy for targeted improvements(Ahmad et al., 2023).

Conclusion

Digital literacy is not just a technical skill; it is a professional imperative for nurses in the 21st century. In Pakistan, digitally empowered nurses can bridge care gaps, educate patients, contribute to policy, and transform health outcomes. By integrating digital literacy into nursing education, Pakistan can build a workforce ready for the future-resilient, informed, and connected. The journey toward digital empowerment must be inclusive, strategic, and sustained, ensuring no nurse is left behind in the race toward healthcare excellence.

REFERENCES

indushospital.org.pk. (2023). https://indushospital.org.pk/events/first-conference-on-ehr-in-pakistan/

Ahmad, R., Mehmood, S. T., & Ijaz, S. (2023). Digital Literacy Competencies: A Study of Distance Learners of Higher Education Regulatory Authority Khyber Pakhtunkhwa. Pakistan Journal of Distance and Online Learning, 9(1), 82–96.

digital-literacy @ digital-transformation.hee.nhs.uk. (2020). https://digital-transformation.hee.nhs.uk/building-a-digital-workforce/digital-literacy

Foronda, C. L., Fernandez-Burgos, M., Nadeau, C., Kelley, C. N., & Henry, M. N. (2020). Virtual simulation in nursing education: a systematic review spanning 1996 to 2018. Simulation in Healthcare, 15(1), 46–54.

Harerimana, A., Duma, S. E., & Mtshali, N. G. (2022). First-year nursing students' digital literacy: a cross-sectional study. J Nurs Educ Pract, 13(1), 31.

home @ www.aku.edu. (2023). https://www.aku.edu/cime/about/Pages/home.aspx

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Javeed, M. (2023). Assessment of organizational readiness towards electronic health records in a tertiary care hospital, Karachi, Pakistan, a quantitative analytical cross-sectional study. https://ecommons.aku.edu/theses_dissertations/2152/

Zahoor, I. A. (2023). Article in The Healer Journal of Physiotherapy and Rehabilitation Sciences. 4(5), 4–5. https://www.researchgate.net/publication/374478157