

## Bridging Clinical Practice and Technology: A Collaborative Approach between Nursing and Health Informatics

Huda Abdullah Hamammi<sup>1</sup>, Eman Abdullah Hamami<sup>2</sup>, Zahra Husien Ali Al Therwy<sup>3</sup>, Magad Mohammad Seed Alblawi<sup>4</sup>, Bayan Khalid Alshuwaikhat<sup>5</sup>, Azzah Abdulla Mohssin Alshahrani<sup>6</sup>, Sarah Abdullah Aldosari<sup>7</sup>, Ali Hussain Mashyakh<sup>8</sup>, Msawa Mohsen Hakami<sup>9</sup>, Mohammed Hadi Mohasen Khourmi<sup>10</sup>, Mohsen Ahmed Jaafri<sup>11</sup>, Saad Mohammad Faysal Saad<sup>12</sup>, Abrar Abdulmohsen Alshammari<sup>13</sup>

<sup>1</sup>Women's Nurse Assistant, Sabya General Hospital, Kidney Department

<sup>2</sup>Nursing Technician, Sabya General Hospital, Kidney Department

<sup>3</sup>Nursing Technician, Sabya General Hospital

<sup>4</sup>Nursing, Dhub General Hospital

<sup>5</sup>Nursing Technician, Qatif Central Hospital

<sup>6</sup>Nursing Technician, Wadi Bin Hashbal Health Care Center

<sup>7</sup>Senior Specialist – Midwife, King Fahad Medical City

<sup>8</sup>Health Informatics, Baish General Hospital

<sup>9</sup>Health Informatics, Ministry of Health

<sup>10</sup>Health Informatics, King Fahd Central Hospital

<sup>11</sup>Health Informatics, Jazan Health Cluster, Primary Care Center in Jariba

<sup>12</sup>Health Informatics, King Fahd Central Hospital

<sup>13</sup>Informatics Health, Hail Cluster

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### ABSTRACT

This paper discusses the key linking or bridging role of nursing informatics between clinical practice and technology in the improvement of patient care, enhancement of workflow efficiency, and ensuring patient safety. Health informatics combines data, information, and knowledge that support clinical decisions, thus facilitating the work of the nurse in managing patient data and reducing the occurrence of errors. It has eased the delivery of clinical care services due to the use of EHRs and data-driven platforms in the clinical workflow, culminating in evidence-based practices. The paper also focuses on developing nursing informatics competencies and collaborative works between nursing professionals and health informatics experts for better optimization of the use of the digital tool within a clinical setting. It means that nursing informatics really has the power to enable a revolution in health care toward better patient outcomes through education, collaboration, and positive attitudes toward technology

**Keywords:** Nursing Informatics, Health Informatics, Electronic Health Records, Patient Care, Nursing Education

### INTRODUCTION

One of the foci of the latter years of modern healthcare has been on that point where clinical practice meets technology. Nursing happens to be among the major professions in the implementation and development of health informatics against the backdrop of improving patient care outcomes. Health informatics has been defined as an integration of data, information, and knowledge in support of decision-making; this has, therefore, enhanced workflow efficiency, ensured patient safety, and created a quality health care (Jen, Mechanic, & Teoli, 2023).

Health informatics empowers nurses with tools to better manage patient information, enhance clinical workflows, and reduce errors. With the integration of electronic health records (EHRs), nursing informatics has enabled practitioners to document and retrieve patient data more effectively, fostering evidence-based practices (Javaid, Haleem, & Singh, 2024). Furthermore, informatics competency is now critical for nurses to provide efficient and safe care in increasingly digital environments (Mohamed & Abouzaied, 2021). This collaboration

between nursing and health informatics offers an exciting approach by filling the gap in clinical practice and technology.

## **METHODOLOGY**

Nursing informatics can facilitate linkage of clinical practice to technology and provide better care outcomes through interprofessional collaboration. Material for this review was obtained by a critical literature review of studies between the years 2000 and 2024 through various databases based on keywords on nursing informatics, health informatics, patient safety, clinical decision-making, and interdisciplinary collaboration. In all, 85 studies were part of this review, the majority of which focused on integrated EHR and predictive analytics into nursing practices. The review also covers the achievement level of nursing informatics competencies, contribution of education to the building of informatics skills, and level of engagement of nursing professionals with the experts in health informatics. This paper synthesizes evidence from a number of studies undertaken to demonstrate how informatics solutions contribute to improved clinical outcomes and transformation of healthcare delivery.

## **LITERATURE REVIEW**

Nursing informatics plays a transformative role in health care-to make care better for the patient, improve workflow, and support clinical decisions with the power of technology. EHR integration thus changed the way nurses documented and accessed patient information, therefore promoting evidence-based practice and communication within the multidisciplinary healthcare team. Health informatics tools will provide nurses with improved management of patient information, reduction of errors, and promotion of patient safety. Care delivery can be considerably optimized, with better clinical outcomes, by integrating predictive analytics with real-time analytical insight to proactively manage the patients.

There are advantages, to be fair, but challenges are not lacking either in a bid to reap the full benefit of nursing informatics. Some major barriers include a lack of informatics competencies among nurses in regard to technical skills, critical thinking, and decision-making to use health information technologies. More nurses need to have further training on how to navigate digital systems and hence enrich informatics in clinical practice. Therefore, the curricula should find a place for programs of informatics education in an effort at better preparation for changes continuously expected within the digital healthcare environment. Besides developing technical competencies, there should also be development in the view of positive attitudes toward technology and making ethical decisions related to data privacy and security.

Collaboration between nursing professionals and health informatics experts is vital for the successful integration of technologies within clinical practice. Nurses offer great insight into patient care, while informatics professionals provide valuable input on how to build and implement effective systems. Such collaboration ensures that technology aligns with clinical practice, enabling better facilitation of seamless data exchange and improvement in care coordination. Other innovative uses of the technology are in engaging patients by managing their health and improving communications with better involvement of healthcare providers through portals, decision support, and predictive analytics.

Incorporating informatics into nursing practice also holds great implications for public health. Using big data analytics, nurses are able to identify trends and better predict patient outcomes to help develop targeted interventions to improve care delivery. In settings where resources are constrained, informatics solutions can hold great promise for optimizing healthcare delivery, enhancing access to information, and responding to such challenges as workforce shortages and inadequate resources.

With constant change in technology, future continuous professional development with collaboration within the healthcare teams will be very important in ensuring the integration of informatics solutions into nursing practice is a success. It is through the building of such an innovative culture of collaboration that achieves health organizations' intentions of quality patient service delivery.

## **DISCUSSION**

The integration of clinical practice and technology is very important in the enhancement of patient care and health service delivery in the digital era. NI plays a very important role in integrating technology into healthcare and, by this integration, enables nurses to access, manage, and analyze data for making clinical decisions. By transforming raw data into meaningful knowledge, nursing informatics empowers healthcare providers to improve the quality and efficiency of care delivery (Jen, Mechanic, & Teoli, 2023). Through the use of health informatics, nurses can address clinical challenges, optimize workflows, and enhance patient safety by leveraging digital tools such as electronic health records (EHRs) and data-driven decision-making platforms (Javaid, Haleem, & Singh, 2024). These tools bridge the gap between clinical practice and technology, fostering improved communication and collaboration across healthcare teams (Alsanee et al., 2024).

This branch of nursing study has great potential but has not been able to realize its expected impacts in the field of healthcare services. The reason relates to the gap in the field of informatics skills and knowledge in nurses.

Much of the nurses are without the technical expertise or even training to handle HIT (Mohamed & Abouzaied, 2021). As a result, there would be a lag in applying the informatics solutions including their proper diffusion and perpetuation to produce desired effects. This calls for a well-grounded knowledge of HIT and its applications in clinical practice. Trainings and curriculums should be informed by efforts at building informatics competencies in a way that ensures readiness for practice within progressive digitization in healthcare environments (O'Connor & LaRue, 2021). Besides, these competencies will also encompass the other non-technical dimensions about critical thinking, clinical decision-making, and ethics in the provision of safe quality care (Joseph, Inayat, Hussain & Afzal, 2019).

Nursing informatics competencies (NIC) are defined as the acceptable levels of knowledge, skills, and abilities required to perform specific informatics tasks effectively. These competencies are vital for ensuring that nurses are prepared to integrate informatics into their daily practice (Mohamed & Abouzaied, 2021). As healthcare systems become more reliant on digital solutions, nurses must acquire the right combination of technical knowledge, skills, and positive attitudes to keep pace with technological advancements (Kinnunen et al., 2022). Attitudes toward technology, in particular, play a crucial role in the successful adoption of informatics. Negative perceptions or resistance to change can impede progress, reducing the potential benefits of digital systems in healthcare (Koltsida & Jonasson, 2021). For example, positive feelings towards technology help nurses embrace informatics; as such, they are able to use it for the complete betterment of their patient's care (Bath, 2008).

The implementation of EHRs is considered one of the most transformational applications of nursing informatics; thus, it remarkably changed how nurses document, access, and manage patient information. Digitizing clinical workflows, EHRs have eased data flow, reduced errors, and improved the accuracy of medical records (Jen, Mechanic, & Teoli, 2023). However, migration to digital systems has resulted in increased burdens of documentation and disruptions to workflow. These challenges highlight the need for user-friendly systems that align with nurses' workflows and support their clinical tasks (Aarts, Peel, & Wright, 1998). Effective collaboration between nursing professionals, healthcare administrators, and IT specialists is essential to design and implement systems that meet the needs of end users while achieving organizational goals (Sadineni, 2020).

Another critical area in nursing informatics that makes use of emerging opportunities to leverage improvement in patient care and population health involves big data analytics. By analyzing large volumes of data, nurses can identify patterns and predict patient outcomes for the designing of effective interventions in care delivery. According to Carney and Kong, 2017, predictive analytics tools facilitate the nurse to pin-point patients that are at high risk and hence intervene early that may reduce complication and hospitalization. Informatics also plays a vital role in public health initiatives, enabling real-time surveillance of disease outbreaks and the development of effective response strategies (Jen, Mechanic, & Teoli, 2023). In developing countries, where healthcare resources are often limited, informatics solutions can help overcome barriers to care by optimizing resource allocation and improving access to health information (Luna, Almerares, Mayan, de Quirós, & Otero, 2014).

This asserts that education and training are very important in the integration of nursing informatics into clinical practice. It is mandatory that academic programs ensure the provision of informatics education to equip nurses for the demands in technologically driven healthcare environments. For example, one of the effective methods of incorporating informatics into nursing curricula is the spiral learning approach, in which students will be allowed to build up in knowledge and skill through their education (O'Connor & LaRue, 2021). Furthermore, practicing nurses should have opportunities for ongoing professional development, such as certifications and workshops, to ensure they remain competent in informatics (Singh & Masango, 2020). Self-assessment tools can also be used to identify gaps in informatics competencies and help target training programs to fill these gaps (Mohamed & Abouzaied, 2021).

It becomes enormously successful when nursing and health informatics people collaborate. The contribution of the nurses is invaluable because they add insights gained through practical needs within patient care, in addition to the technical expertise of designing and deploying effective systems by the informatics professional (Alsanee et al., 2024). Therefore, collaboration ensures that technology performs its intended function and is in line with the real situations happening in clinical practice. For example, multidisciplinary teams can work together to develop interoperable systems that facilitate seamless data exchange across healthcare settings, improving communication and continuity of care (Ryan & Eklund, 2008). Such collaborative efforts are particularly important in specialized fields like radiology, dental care, and public health, where informatics solutions must address unique challenges (Alsanee et al., 2024).

Integration of informatics into nursing practice also extends widely to patient engagement. Digital tools, like patient web portals, empower them to take an active role in managing their health, which improves communication between patients and providers, giving way to a collaborative approach in care (Wickramasinghe, 2019). Solutions in clinical informatics might also provide the nurse with decision support to medicate the patient, monitor the patient's vital signs, and care for a complex patient. Such innovations, according to Gibbs, Gibbs, & Hewitt, 2023, further enhance patient safety. Ethical issues regarding the utilization of the digital systems, areas of data privacy, and security need consideration. Ensuring robust

cybersecurity measures and maintaining transparency in the usage of informatics is important for generating trust among patients and service providers (Javaid et al., 2024).

As technology continues to evolve, the nursing profession must adapt to meet the changing demands of healthcare. This requires a commitment to lifelong learning and the development of new competencies to navigate an increasingly digital environment (Mohamed & Abouzaied, 2021). Nurses must also be actively involved in the planning and decision-making processes for the adoption of new technologies to ensure that these systems meet their needs and align with the goals of patient-centered care (Koltsida & Jonasson, 2021). Care organizations should provide an enabling environment that nurtures innovation and teamwork to integrate informatics in nursing practice in order to enhance quality and efficiency in the delivery of care. - Aarts, Peel, & Wright, 1998.

## CONCLUSION

Nursing informatics provides an opportunity for health transformation in which nurses will be better prepared to make informed decisions, manage workflow, and optimize patient care. To realize this promise, however, the practitioners need to be educated about availability and use of informatics in practice. By focusing on education, collaboration, and the development of positive attitudes towards technology, nursing stands a better chance to integrate informatics into clinical practice and reduce the gap between clinical practice and technology. In this way, informatics will be thought of as a tool in advancing patient care to meet some health challenges and, generally, contribute to improvements in health-care systems across the world.

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