Use of an Electronic Health Record System in the Nursing Education Lab & Simulation Setting

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(Nelson & Parker, 2019)

Abstract

Simulation has become a significant component of nursing education in recent years, especially with the increasing demand for high-fidelity simulations. However, nursing education struggles to keep up with the ever-changing healthcare technology, specifically electronic health records (EHR). Integrating EHRs into nursing education in areas such as the lab or simulation settings has the potential to impact overall patient safety, familiarity with similar technology, critical thinking skills, and practice readiness of student nurses. A review of the literature was performed, and it was found that the implementation and integration of an EHR in nursing education has overwhelming effects on overall student performance. Positive results of EHR implantation and integration not only simulate the clinical setting but also improve students ' adaptability to EHR with familiarity, prioritization, nursing skills, and critical thinking, which directly affects patient safety.

Keywords: electronic health record (EHR), student nurse, nursing education, patient safety, practice readiness, simulation, critical

Introduction

Within healthcare, there has been a major push in the use of technology since 2009 when the Health Information Technology for Economic and Clinical Health (HITECH) Act was established. The HITECH Act promoted and encouraged the establishment "of health IT, including electronic health records and private and secure electronic health information exchange" (The Office of the National Coordinator for Health Information Technology [ONC], n.d.) As a result, many healthcare organizations have established the use of electronic health records (EHR) or electronic medical records (EMR). This implementation by healthcare organizations poses the question as to how or if healthcare academia, specifically nursing, has implemented ways to incorporate such technology into curricula to stay up to date with current practices and ensure practice-ready nursing students in not only the clinical or practicum setting during education but also the workforce following graduation. Additionally, Velez and John (2023) voice concern that new graduate nurses experience enormous change and adjustment at the beginning of their career, stating that using EHR systems seems to "increase the burden on new nurses." Velez and John continue by stating that inexperience is related to the lack of exposure during nursing education, leaving new graduates unprepared to use technology and placing importance on nursing education informatics. In addition to Velez and John, many nationally recognized organizations, including the National League for Nursing [NLN] (Bonnel et al., 2019), Quality and Safety Education for Nurses [QSEN], the American Nurses Association [ANA], and the American Association of College of Nursing [AACN] support the need and push for incorporating informatics within nursing education (Badowski et al., 2018). Additionally, a study conducted by Hayden et al. (2014) specifically for NLN found that simulation can be used to replace up to fifty percent of intended clinical hours and provide the same desired effect and learning experiences In support of simulation in higher education overall, Chernikova et al. (2020) identify simulation as facilitating "complex skills involving problem solving, diagnosing, communication, and collaboration" (p. 526). Ultimately, this leads to question the impact that the integration of electronic health record systems (EHR) in the nursing education lab and simulation settings may have.

Review of Literature

A literature review was completed regarding the use of electronic health records within nursing education; several prominent themes were found within the literature: *student nurse skills and performance*, *critical thinking skills*, and *effects on patient safety*. Although not related specifically to the aforementioned themes, Badowski et al. (2018) conducted a study in which participants reported the various locations within nursing education where the EHR was used (Figure 1), depicting EHR's versatility in nursing education.

Student Nurse Skills and Performance

- Development of prioritization skills, improved documentation, and allowed for immediate feedback within a safe environment from instructors (Warboys et al., 2014, as cited by Forman, Armor et al., 2020, p. E6).
- Overall improvement in all nursing skills and performance areas with early exposure to EHR in nursing education (Everett-Thomas et al., 2021).
- Kowitlawakul et al. (2015, as cited by Forman, Flores et al., 2020) found that EHR allows "students to realistically document nursing interventions" (p. 37).

Critical Thinking Skills

- "Critical thinking is an important outcome of nursing education," and continued exposure to nursing practices is paramount for developing and improving critical thinking skills (Oermann et al., 2018, p. 20).
- Students voiced an improvement in overall critical thinking abilities or were able to identify areas of needed improvement within critical thinking when using EHR in nursing education (Kleib et al., 2021).
- Using EHR enhances the development of both critical thinking and clinical judgment (Hong et al., 2022).
- EHR use stimulates and encourages the use of critical thinking skills, ultimately resulting in development and improvement (Mollart et al., 2020)

Patient Safety

- Patient safety remains the top priority for all healthcare professionals and a frequent topic of conversation within nursing education and the nursing profession.
- EHR in nursing education allows students to practice and interpret pertinent patient information within a safe environment, directly affecting how students learn to communicate, document, and provide nursing care (Raghunathan et al., 2021).
- Students voiced that using EHR allowed them to feel confident in providing safe patient care and medication administration (Jansen, 2014, as cited by Forman, Flores, et al., 2020, p. 37).
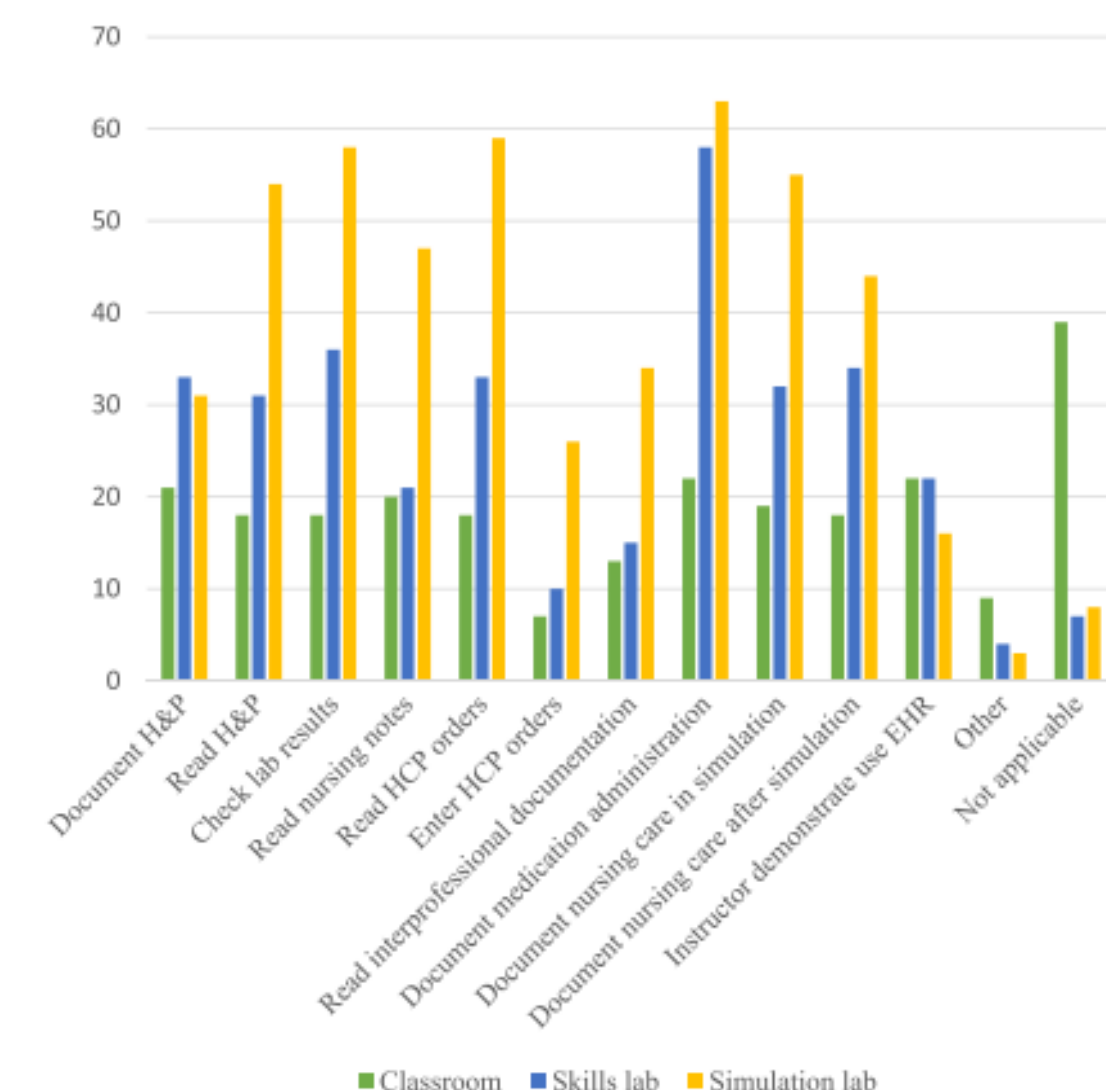

Figure 1: Graph from the study by Badowski et al. (2018, p. 434) identifying areas of EHR use within nursing education as reported by participants.

Methodology

Research Question: Does implementing EHR use in nursing education lab and simulation settings improve clinical and practice readiness and overall interpretation of clinical findings?

Hypothesis: Implementation of EHR within nursing education lab and simulation setting will improve students' critical thinking skills, clinical and practice readiness, and overall comfort with EHRs, including but not limited to navigation and documentation.

Design: An EHR specific to academia, such as *EHR Go*, will be integrated and implemented into all nursing cohort courses for lab and simulation purposes. Overall student performance on various exams, clinical performance, simulation performances, and interpretation of clinical findings will be compared to previous cohorts that did not have the implementation of an EHR. Comparisons with previous cohorts will be gathered using quantitative and qualitative data from students, assessing the ease of use, confidence in assessing or identifying clinical complications using information from the simulated EHR, and overall preparedness for clinical rotations. A voluntary follow-up survey will be sent to all recent graduates to understand the overall perception of preparedness for practice readiness, specifically regarding the implementation of *EHR Go*. To gather a full understanding, the study will be longitudinal in nature.
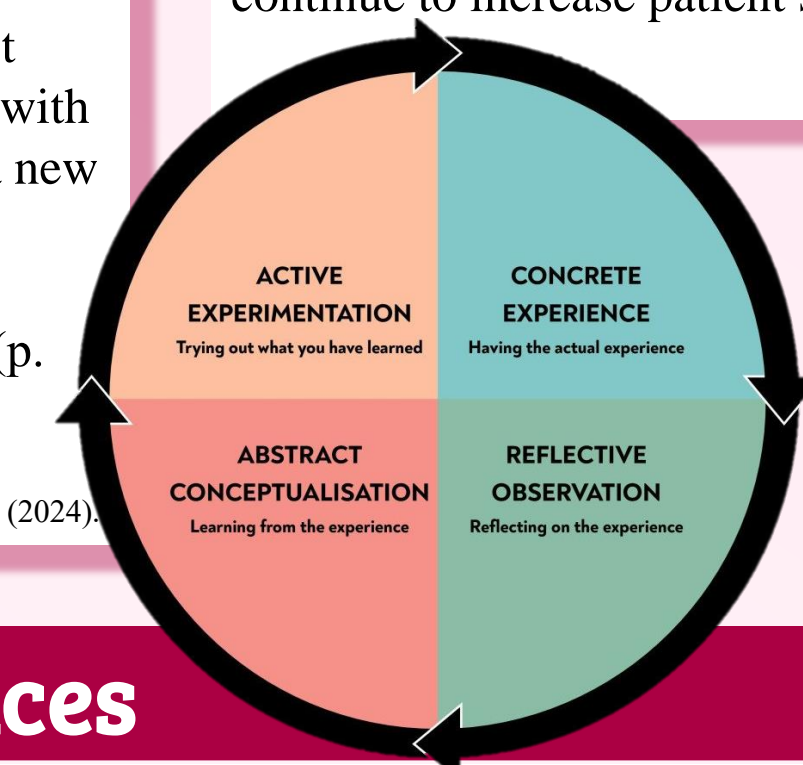
Ethics: The FHSU IRB's approval will be obtained before initiation.

Theoretical Framework

Kolb's Experiential Learning Cycle

Kolb (1984, p. 34, as cited by Mcleod, 2024) stated, "Learning is the process whereby knowledge is created through the transformation of experience". The theoretical framework David Kolb developed is the *Experiential Learning Cycle*, which focuses on the cognitive processes of the learner. Kolb expressed that four stages of learning exist, and in order for a learner to be effective, all stages in the learning process must occur. The four stages within Kolb's Experiential Learning Cycle include: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Each stage directly interacts with the subsequent stage, which is depicted in Figure 2, ultimately resulting in a new learning experience (Mcleod, 2024). Wijnen-Meijer et al. (2022) state in reference to Kolb's Experiential Learning Cycle, "the learned knowledge is mentally anchored by a concrete experience, corresponding to knowledge" (p. 2).

Figure 2: Visual representation of Kolb's Experiential Learning Cycle by Mcleod (2024)

Anticipated Findings

Anticipated findings regarding implementing and integrating an EHR, such as *EHR Go*, into nursing education would be congruent with current research. The findings of this research question will follow after the collection of data for a significant length of time to depict the overall impact that EHR implementation and integration would have on nursing students. As noted in the research, students are expected to demonstrate confidence, improved navigation, comfortability, and documentation within any given EHR. Additionally, students would demonstrate improved critical thinking, advanced documentation skills for new graduates, and increased practice readiness.

Recommendation: A recommendation of this study would be to discuss any changes noted among new graduates with a Professional Advisory Committee (PAC) for the nursing program specific to the use of an EHR. Contacting the PAC of a nursing program allows for direct insight into not only happenings within nursing practice but also what other facilities are seeing and experiencing with new graduates.

Conclusion

The overall benefit of implementing and integrating EHR into nursing education in the lab and simulation setting will benefit nursing education and assist in developing nursing professionals. The use of EHR in nursing education will help develop critical thinking skills, advance nursing skills and performance, and continue to increase patient safety.

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