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Research Article

Academic Electronic Health Records (SimChart) Usage: A Comparative Study

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Abstract

Introduction: Electronic Health Records (EHRs) are a major part of healthcare, especially in nursing. Nursing informatics has led to the creation of academic EHRs, which facilitates growth within nursing curriculum programs and healthcare organizations. Academic EHRs allow nursing institutions to prepare future nurses for the use of real EHRs in their professional practice, thus promoting positive outcomes for patients, staff, and healthcare organizations. However, there has been no research regarding the SimChart toolan academic EHR. Hence, Howard University, College of Nursing and Allied Health Sciences (CNAHS) investigated a comparative study on the usage and effectiveness of academic EHR (SimChart) in an undergraduate students' cohort enrolled in two different courses at different semesters. **Method:** SimChart was used during the 2022 Fall Semester for the Upper-Level Junior (ULJ) in Fundamental class and 2023 Upper-Level Senior (ULS) in Adult Health class. The classes were taught by the same instructors as well. Data were collected via a Survey Monkey from the students and the results compared through an 18 question items-survey regarding demographics, perception, and effectiveness of SimChart usage during laboratory and pre-clinical rotation. A University approved IRB **(#IRB-2022-0467)** was obtained prior to initiation of the study. **Data Analysis:** Data collected from both courses were analyzed and compared, pointing out significant findings, especially as it relates to undergraduate students' perception of the SimChart benefits and usability. The data were in turn used in the graduate practicum assignments which enabled graduate students to carry out data analytics using the Survey Monkey tool. **Results:** The results varied among student cohort ranging from receptiveness, utilization, and benefits. The result showed that a significant number of students in both classes were receptive to implementation of SimChart in clinical practice and felt that the documentation tool was an entry-point into the professional world of nursing. However, it is important to note that 74 (90.24%) ULJ students stated that SimChart was easy to navigate, access, and user friendly in documentation for the Fundamental class which is more significant than the results that was reported by the ULS, 62 (86.11%) students in the Adult Health course. This difference could be attributed to delayed tool implementation of the ULS as the grant planning and strategies were being sorted out. **Limitation and Future Research:** Applying the pilot study in only one department and not exposing other students in the same college for an in dept usability and perspective was missed. Although there were many benefits to implementing academic EHRs in nursing institutions, several barriers remain, which present an opportunity for further research.

Background

Nurses are knowledge workers as they are the largest population in healthcare who use EHR databases routinely at bed sides [1]. EHR databases hold pertinent patient information such as statistics, prescriptions, laboratory and imaging results, treatments, and provider documentation records [2]. As a result, research is being conducted to evaluate the effectiveness of academic EHRs within nursing institutions. Studies have shown that the use of academic EHRs within nursing programs will prepare novice nurses to use computerized documentation tools, which will facilitate an opportunity for patients to receive circumspect and sufficient care [1]. Manal Kleib and his colleague in 2021 investigated an academic EHR DocuCare, created by Lippincott®.

DocuCare is an academic EHR facilitated by Lippincott® to allow nursing students an opportunity to gain applicable expertise pertaining to nursing informatics. Utilization of DocuCare allowed pupils to access a protective structure prior to working in the professional realm with actual patients and documentation archives [3]. The investigators used several questionnaires and interviews for the nursing students and nursing facilitators at a higher education nursing program in Canada. The research permitted nursing students free-will, to complete four exemplars in a month to aid in the use of the academic EHRs. Completion of the exemplars afforded a chance to correct presentation of this academic EHR and assess the overall approval from participants using the new tool. According to the study, thirteen out of twenty-three nursing students completed the research expressing satisfaction with the academic EHRs. Additionally, the authors noted that continual use of the academic EHRs allowed for better performance among nursing students. This research allowed implementation of an academic EHR within an undergraduate nursing program in Canada and enabled additional recommendations to ensure smooth transition of the new method.

Lyndall Mollart and colleagues in 2020, reviewed fifty-five articles from various nursing programs to evaluate the importance of implementing academic EHRs systems into nursing curricula. The implementation of academic EHRs helped prepare future nurses to effectively transition from a student to clinical role. Students had an opportunity to document as professional nurses and utilize the tool in a manner that would be productive to their future occupation. Unfortunately, although the creation of the academic EHRs is beneficial, their creation can cause challenges such as resistance and financial burdens. However, such barriers should not limit the integration of academic EHRs in clinical courses because they are beneficial tools within the nursing profession [4].

Patricia Baxter (2018) [5] highlighted how implementation of academic EHRs allows for successful future results from student nurses. As student nurses seek potential career opportunities, potential employers will be more inclined to hire such students because of previous experience with various EHR databases. It is the belief that nursing institutions will create an environment like the workplace culture, allowing nursing students an opportunity to smoothly transition into their prospective role. To understand the value and impact nurses have within the healthcare system, it is imperative for nursing institutions to integrate the use of academic EHRs in their programs. By the same token, application and review of stimulated electronic databases will help nursing institutions to understand the merit of EHRs in academic settings. Unfortunately, many nursing institutions are not providing future nurses the opportunity to continually use academic EHR tool within their programs either due to financial constraints or unknowingly unaware of the merit of EHRs in academic settings. Hence, this study compares the usage and effectiveness of academic EHR (SimChart) in an undergraduate students' cohort enrolled in two different courses at different semesters.

Methods and Design

SimChart was used during the 2022 Fall Semester for the Upper-Level Junior (ULJ) Fundamental class and in 2023 for the Upper-Level Senior (ULS) Adult Health class. The classes were taught by the same instructors as well. Data were collected from students via Survey Monkey and the results compared through an 18 question items-survey using demographics, perception, and effectiveness of SimChart usage during laboratory and pre-clinical rotation. This study was approved by the Howard University Institutional Review Board **(#IRB-2022-0467)** and funded through the

Data Analysis: Data collected from both courses were compared, pointing out significant findings, especially as it relates to students' perception on the benefits and usability of SimChart. Students in the graduate practicum class were able to analyze the collected data using the Survey Monkey tool.

Results

Comparative Outcomes between Upper-Level Senior and Junior Students

ULS (Upper-level Senior) Adult Health Course, Spring Semester, 2023 and **ULJ** (Upper-Level Junior) Fundamental Course, Fall Semester, 2022).

| Variable	ULS (Upper-level Seniors)	ULJ (Upper-Level Juniors)
Ethnicity of students (Black or African American	70 (98.59%)	79 (96.34%)
Age (18-24 years)	69 (95.83%)	79 (96.34%)
Frequency of SimChart use	61 (84%)	56 (68.3%)
SimChart: an effective tool that helps with data input and critical thinking	52 (73.24%)	52 (64.2%)
SimChart enables electronic documentation practice in simulated real-life settings.	57 (79.17%)	69 (84.14%)
Students learn integration of electronic documentation into workflow	46 (64.79%)	58 (71.61%)
Review of Provider charts	62 (92.54%)	76 (93.83%)
Initiate, evaluate plan of care	52 (80.00%)	65 (80.25%)
Perform Focused Assessments	46 (70.77%)	57 (70.37%)
Used SimChart in Fundamentals course	62 (86.11%)	74 (90.24%)
Used SimChart in Health Assessment courses	47 (65.28%)	81 (98.78%)
Used SimChart in Adult Health	63 (87.50%)	0 (0%)

Table 1: Comparative Outcome Results between ULS And ULJ.

More ULS, 70 (98.59%) students were identified as Blacks or African Americans than their ULJ, 79 (96.34%) counterparts. On the inverse, more 79 (96.34%) ULJ were within the younger age group (18-24) years while 69 (95.83%) of students in the same age bracket are ULS as shown in figure 1. The difference may be attributable to the current trend of an increasing number of younger immigrants and high enrollment of youngsters embracing the healthcare professions, especially in nursing [6].
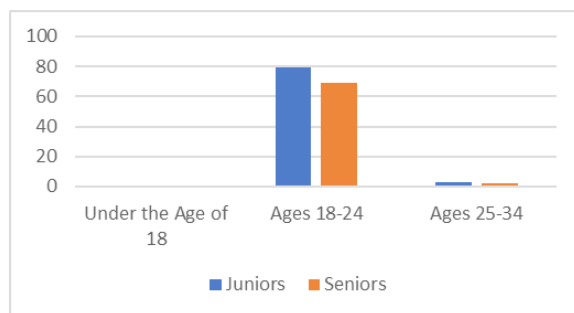
Figure 1: Differences between ULS and ULJ within Students' Age Range 18-24.

As was illustrated in figure 2 below, nurses taking Adult Health course and those taking Fundamental course provided positive feedback on the impact of SimChart training on respective nursing activities including safe medication administration, and clinical documentation skills. In addition, better understanding and interpretation of patient information in provider charts as well as the ability to make clinical judgments and prioritize care were positive documented responses. Ironically, there is a slight increase in the percentage of ULJ -respondents to the question that SimChart enabled them to complete different nursing activities, when compared to ULS-respondents. This is noteworthy, considering that senior students would have had more hands-on and lengthier experience working with SimChart. In the same vein, more ULJ 76 (93.83%) than ULS 62 (92.54%) admitted to utilizing SimChart to review provider charts (figure 2). This is expected due to the delayed introduction of the SimChart tool to ULS in junior class due to gap during the implementation phase without any strategies on the research goal. While this difference is marginal, it still speaks to the increasing awareness of digital healthcare and its relevance in today's healthcare delivery system for early implementation.
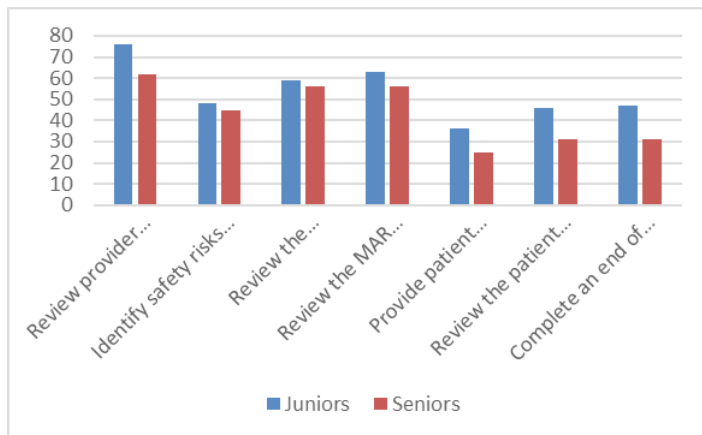
Figure 2: Differences in Nursing Activities between ULJ and UJS.

Additionally, 74 (90.24%) junior students used SimChart in Fundamentals course, as against 62 (86.11%) ULS, this could be explained by a heightened consciousness to expose nursing students to EHR training, early in their training, to enable familiarity and proficiency, with use, as they gain practice experience. As expected, a remarkable high number of ULJ students, 81 (98.51%) had used SimChart in Health Assessment course, compared to 47 (65.28%) ULS for the same course because the ULS were not exposed to the tool early enough, as they have not attended or been exposed to hospital EHR prior to taking the survey. It was observed that 74 (90.24%) ULJ used SimChart in Fundamental courses. Significantly, 76 (93.83%) ULJ have used SimChart to review provider charts, as against 62 (92.54%) ULS (figure 2). The higher number of ULJ utilizing SimChart in chart reviews could be

explained by the increasing consciousness about exposing students early in the curricula to academic EHR training and utilization in clinical courses as shown in figure 3 below.
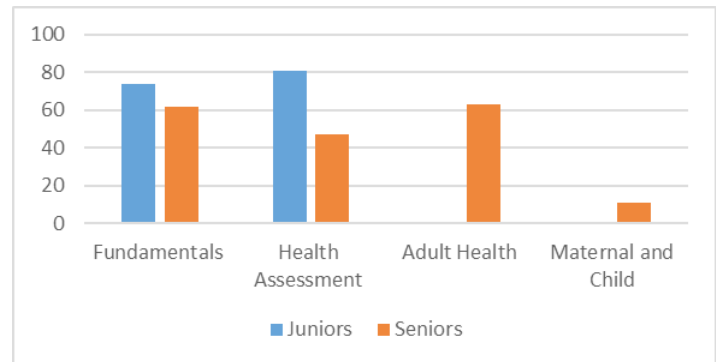
Figure 3: SimChart Course Usage Difference between UJS and ULJ.

There was not much variation in responses of first year upper level ULS and ULJ class to Perceived Importance of SimChart usage in Case Study, Simulation, or Clinical arena as well as Perceived Usefulness of SimChart in Undergraduate Program. Also, there are minimal variations to responses that SimChart is an effective tool that helps students input clinical data and think critically with great learning outcome. Interestingly, responses were tied between ULS and ULJ to SimChart, being an effective tool that helps with data input and critical thinking as shown in figure 4 below.
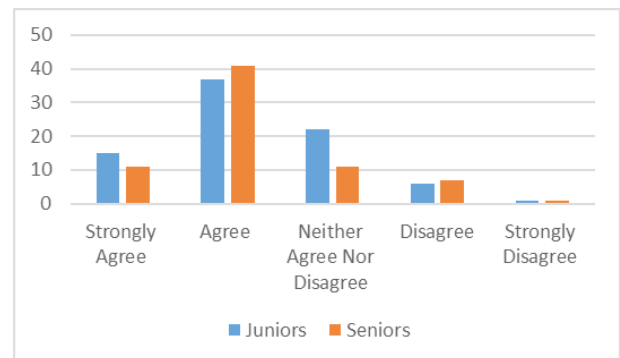
Figure 4: Differences in Critical thinking with SimChart Usage between ULS and ULJ.

Summary/Conclusion: Academic EHRs (SimChart) in academic settings help prepare future nurses for the professional world of nursing. In the fall of 2022, and the spring of 2023, Division of Nursing surveyed junior and senior nursing courses to evaluate the effectiveness of SimChart. Out of eighteen questions, 73% of ULJ and 82% of ULS students participated, with a high percentage in favor of the SimChart to build critical thinking and skills applicable to the field of nursing. Many of the students in both

courses were between the ages of 18-24 years old and originated from a Black/African American ethnicity. Majority of students in both courses felt that SimChart allowed them to review provider charts, initiate, evaluate, and update client plan of care. Moreover, among ULJ students, SimChart was used in fundamentals and health assessment, while ULS utilized the documentation system in fundamentals, health assessment, adult health, and maternal child. Although many students were in favor of the tool, several limitations were observed such as lack of representation of the study from other nursing schools, and the lack of incorporation of other departments in the College, who have witnessed success from the use of other types of academic EHRs. It is hoped that this study will help other colleges and universities realize the benefits of academic EHR to aid in early and successful implementation among future nurses.

Limitations: Limitations to this study include various factors. First, this study included one institution Howard University, and two nursing courses at undergraduate level. Thus, presenting a lack of representation among other colleges and institutions, who may have had similar documentation tool or could have benefited from the use of other types of academic EHRs. In addition, this study did not include students of different programs within the University Health Sciences such as medicine, dentistry, pharmacy, and or radiology, who may have used tools like SimChart and could have provided feedback on the success or failure of SimChart. Having access to a large population allows one to truly evaluate the effectiveness of implementation of a tool such as SimChart to promote student learning and patient safety and care.

Future Research: Future research should include a greater representation of nursing schools, who utilize documentation tools, which will allow one to truly test the effectiveness of implementing the SimChart tool within academic settings. Additionally, it will be beneficial to track students' post-graduation, who utilized a stimulating chart tool to assess if the tool was helpful in preparing them for professional nursing, and workforce. Outcomes from both suggestions will help to enhance the SimChart tool in a way that is favorable for academic settings, who utilize these resources to prepare future nurses.

Study Implications: Overall, this study has shown that the integration of academic EHRs in nursing programs is an asset to nursing institutions, future nurses, and patients. Application of academic EHRs within nursing programs allow future nurses understand aspect of the data entry and analytics in nursing. Additionally, academic EHRs allows future nurses an opportunity to practice assessing and improving documentation techniques pertinent to patient care. Lastly, implementation of academic EHRs hold nursing institutions accountable for producing competent future nurses, who provide high quality patient centered care and follow mandated regulations concerning the use of technology and informatics in nursing programs to maintain accreditation. Although there are barriers to the use of academic EHRs as it relates to cost and funding opportunities, the benefits outweigh the risk and allows for optimal responses for nursing institutions, prospect nurses, and patients. Early introduction of academic EHR is key as shown in this study.

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