



Exploring nursing students' perceptions on usefulness, ease of use, and acceptability of using a simulated Electronic Medical Record: A descriptive study



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ABSTRACT

Background: Modernisation in the healthcare landscape has seen the spread of the integration of health information technology to replace paper-based systems with Electronic Medical Record (EMR) systems. Although this technology has become accessible in most healthcare settings globally, its adoption into nursing school curricula as a teaching tool and learning strategy is slow. Universities are now faced with a number of challenges to ensure nursing and midwifery students are well-equipped to use this new technology upon graduation and to determine how best to integrate this new technology into undergraduate health education curricula.

Objective: The purpose of this study was to develop an Interactive Simulated Electronic Medical Record (ISEMR) as a learning tool and assess students' acceptability and intention to use the tool in their nursing education.

Methods: A quantitative descriptive study was conducted in the cohort of second-year undergraduate nursing students enrolled in a clinical course in a Bachelor of Nursing program in Australia. This study was guided by the Technology Acceptance Model (TAM). Data were collected over one semester using a validated questionnaire to measure the students' perceived ease of use, perceived usefulness (PU), intention to use, and acceptability.

Results: Of the 530 students enrolled in the course, 433 (82%) participated in the study. In accordance with the TAM, the findings showed that PU of the ISEMR in providing learning and experience for the future was significant in determining students' intention to use it. Students who perceived the ISEMR easy to use were more likely to perceive usefulness.

Conclusion: Integrating the EMR into the nursing curriculum will be beneficial in providing undergraduate nursing students with the opportunity to enhance critical thinking, improve documentation, and enhance understanding and nursing skill. The findings from this study will drive learning and teaching approaches that will lead to growth in capability with health information technology.

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Summary of relevance**Problem or Issue**

The adoption of Electronic Medical Record in the nursing curricula is lagging.

What is already known

Documentation is an important aspect of patient care. Documentation taught in universities has been traditionally paper-based.

Electronic documentation is fast becoming integrated into healthcare facilities resulting in graduate nurses being expected to be proficient upon graduation.

What this paper adds

Integrating an easy-to-use simulated Electronic Medical Record into the nursing curriculum is considered by students to be acceptable, easy to use, and useful for learning.

1. Introduction

Globally, healthcare is changing through the rapid development of technologies. Over the last two decades, the delivery of healthcare has changed dramatically in Australia (Australian Government, 2020). The rapid progression of digital technology and informatics within the healthcare setting, for example, moving from paper-based to electronic patient records, is encouraged within Australia by the Australian Government (2020), the Nursing and Midwifery Board of Australia (2016), the Australian College of Nursing (2017), and the Australian Nursing and Midwifery Accreditation Council (ANMAC) (2019).

Electronic Medical Records (EMR) comprise the clinical data repository for the patient, including radiology, and pathology reports, medications, and clinical documentation such as progress notes. The EMR is the legal record created in hospitals and ambulatory environments that is the source of data for the Electronic Health Record. This technology has become accessible in most healthcare settings around the world (Berner, Detmer, & Simborg, 2005; Ventura et al., 2011; Williams & Boren, 2008).

2. Background

Many nursing schools internationally have integrated simulated EMR into their undergraduate nursing programs (Choi, Lee, & Park, 2018; Donahue & Thiede, 2008; Hebert & Madigan, 2018; Hong et al., 2022). Although these nursing schools use different EMR software and platforms, they share the same focus that includes entering and retrieving data. These learning activities provide nursing students with hands-on electronic documentation experience, and the applicability of theory to case studies (Almulhem, 2021). Nursing students using these EMR have been shown to be more effective in clinical placement with greater skill in retrieving patient electronic data and documentation (Choi et al., 2018; Elliott, Marks-Maran, & Bach, 2018; Kowitlawakul, Wang, & Chan, 2013; Raghunathan, McKenna, & Peddle, 2023a).

As nurses and midwives form the largest healthcare workforce in Australia (Australian Government, 2021), the importance of incorporating the necessary skills into the emerging workforce is essential. In recognition of this, the National Digital Health Capability Action Plan (Australian Government, 2022) advocates for incorporation of foundational digital health capabilities into ANMAC-accredited courses. Such capabilities may be gained through simulated EMRs that encourage nursing students to retrieve and work with the technology in their undergraduate program (Raghunathan, McKenna, & Peddle, 2023b).

In Australia, many major metropolitan hospitals, nursing homes, and medical centres throughout Australia have already transitioned to the EMR with the balance due to transition by 2025 (Australian Digital Health Agency, 2020). Despite this, in Australian nursing programs, clinical nursing documentation is taught mostly in paper-based documentation format. Nursing education in Australia still relies on ‘coincidental exposure’ of nursing students to electronic documentation when they are out on placements, and most often only after they graduate (Lokmic-Tomkins et al., 2022).

Simulated EMRs have not been systematically integrated into nursing education curricula in Australia. Lack of funds and cost of purchase from vendors are the main reasons for this, with the very few academically developed EMR tools that exist stated to be basic and too simplistic (Raghunathan et al., 2023b). The purpose of this study was to develop a simulated EMR as a learning tool and assess students’ acceptability and intention to use the tool in their nursing education.

3. Context and development of Interactive Simulated Electronic Medical Record for classroom use

An Interactive Simulated Electronic Medical Record (ISEMR) system was designed in-house to be used in the Bachelor of Nursing program and tested in one clinical course in the second-year suite of courses where learning currently took place in the simulation laboratory. Integration of the ISEMR system complemented current teaching activities. Development of the clinical documents integrated into the ISEMR was based on documents from various health facilities familiar to our students through clinical placements.

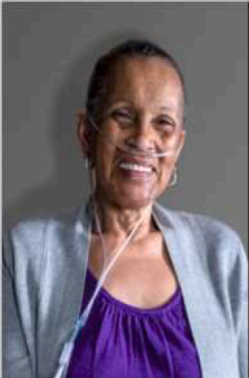
OneNote Class Notebook (Microsoft Corporation, 2018) was used as the platform for the ISEMR system. The platform was a pragmatic choice as it was inbuilt into Microsoft Office suite of products and all staff and students at the study site, a regional university in Queensland, had free access to this software.

To achieve the purpose of the study, the ISEMR was built with the following specifications:

1. To provide the basic functions of an EMR used in clinical and nursing home settings, including medication and fluid order charts, general and neurological observation charts, progress notes, risk assessment and care planning tools, as well as laboratory and radiology findings.
2. Integration of specific patient cases based on the course learning objectives for application in the simulation laboratory sessions.
3. A main focus on documentation.
4. An ability to auto-sync and auto-save with each entry.
5. Allowing sharing of charts by all nursing students enrolled in the course at all campuses.
6. Containing different tabs for each patient chart (Fig. 1) for easy access and navigation.

All nursing students enrolled in the course could access the ISEMR using their same university-issued email. This made signing in simple as students were using the same email and password that they use to access their student email and their Study Desk, a platform where students access content for all of their enrolled courses. Introductory tutorial sessions were organised in week one to three of semester to introduce students to the ISEMR. For students who missed attending the tutorial session at the beginning of the semester, a video was created introducing them to the system. Besides the tutorial sessions and the video, students were also provided with a step-by-step user guidebook that included screenshots of the ISEMR.

Denise Palmer Case Study



Admission Notes
Admission Notes

PATIENT: Denise Palmer
DOB: 16 July 1971
PAST MEDICAL HISTORY:
 1. Smoking induced Chronic Obstructive Pulmonary Disease
 2. Asthma

SOCIAL HISTORY:
 1. Smoker since age of 12- currently on 2 packs per day
 2. Drinker- 2 to 4 cans of beer per day
 3. No history of illicit drug use

MEDICATION AT HOME:
 1. Oxygen 1L/min via nasal prongs
 2. Budesonide (Pulmicort) Inhaler 1 puff BD
 3. Tiotropium (Spiriva) Inhaler 2 puffs OD
 4. Salbutamol Inhaler 2 puffs PRN

TRIAGE NOTE

Self-presents to Emergency Department (ED) at 0630hrs with a flash burn resulting from lighting a cigarette whilst on home oxygen. Ms Denise Palmer describes to the triage RN how "the cigarette just exploded" on lighting. She has sustained a 3% superficial facial burn, with singed eyebrows and nasal hairs and soot in the nostrils.

Physical examination
HEENT: Airway clear, oropharynx clear
CN: Alert, awake apart from anxious appearance, PEARL 3/3, no sensation losses
CHEST: Heart sound normal, no murmur, rapid and regular. 2+ pitting oedema bilateral lower extremities and strong pulses in all four extremities. Reasonable air entry with bilateral wheeze on auscultation. Trachea midline, no obvious sign of burns
ABDOMEN: Soft, non-tender. Bowel sounds are normal
SKIN: Very dry

Vital signs
 Heart rate: 99 bpm
 Blood pressure: 146/ 96 mmHg
 Respiration- 33 bpm
 SaO₂: 94% on 2L/min Oxygen via nasal prongs
 PAIN: 6 out of 10

CXR: Unremarkable, consistent with COPD: hyperinflated lungs with lower and flatter diaphragm, moderate cardiomegaly

12 lead ECG: Unremarkable

Background: Denise lives alone and is on disability pension.
HEENT= Head, Eyes, Ear, Nose and Throat

Session 1
Session 1

TRIAGE NOTE

Session 2
Session 2

Additional Information
Additional Information

Denise Palmer

Wednesday, 24 November 2021 1:26 PM

★ To use the buttons below, you will need to hold down the CTRL button and Click on the button with your mouse.

ADDS Chart

GCS

Intravenous and Subcutaneous Fluid Order Form

Medication Chart

Nursing Assessment Care Plan

Pain and Sedation Assessment

Progress Notes

24 Hour Fluid Balance Summary

Daily Fluid Chart

Waterlow Score

Humidified High Flow Oxygen

Fig. 1. Example of a case study and tabs of the Interactive Simulated Electronic Medical Record.

The development of the ISEMR was tailored to provide opportunities for nursing students to experience electronic documentation. Therefore, the functionality was slightly different from the EMR systems in the hospitals. The hospital EMR system allows the health practitioner to access all patients' previous records and admissions, while the ISEMR only allows the student to access the patient's current record. The hospital EMR use red flags as alerts if the patient has any abnormal results or vital signs. In the ISEMR, the student must recognise the changes in patient health status and abnormal results without being prompted by an alert system. The development of the ISEMR was tailored to provide opportunities for nursing students to practice electronic documentation. As far as we were aware, this was the first bespoke EMR program developed as a teaching tool and learning strategy embedded in and designed for nursing education in Australia.

4. Theoretical framework: Technology Acceptance Model

The Technology Acceptance Model (TAM) was used to assess the intention to use and acceptability of the ISEMR (Davis, 1989). TAM has been used in various other health-related research (Holden & Karsh, 2010) and its validity in health research has been recognised in previous studies (Rahimi, Nadri, Afshar, & Timpka, 2018; Zhu & Zhang, 2022). TAM posits that the acceptance of a new technology will depend on the belief that the technology will help achieve personal goals (perceived usefulness (PU)) and the belief that the technology is easy and uncomplicated (perceived ease of use (PEU)), as in Fig. 2. The hypothesis is that both PU and PEU affect an individual's attitude towards and subsequent intention to use the technology. An individual is assumed to have formed the intention to use the technology if the evaluation of the technology is positive (Davis, 1989). By utilising TAM, this study furthers our understanding of influencing factors that will affect nursing students' acceptance and use of technologies, specifically the bespoke ISEMR in the nursing curriculum.

5. Methods

5.1. Study design

This study used a quantitative descriptive design. We surveyed a convenience sample of second-year nursing students on their experience and perceptions of using an ISEMR in the simulation laboratory sessions. The study was approved by the University Human Ethics Review Committee (H19REA178).

5.2. Participants, recruitment, and consent

All 530 second-year nursing students enrolled in a second-year clinical course where teaching and learning took place in the simulation laboratory were sent an email inviting participation in the study. The study proposal and participant information sheet were sent together with the email. Students were advised in the email that an online questionnaire about their experience could be accessed and completed on the last day of their simulation laboratory sessions.

The simulation laboratory sessions were run over three days throughout the semester. On day one of the simulation laboratory sessions, students were provided an explanation about the study and the participant information sheet was given to each student informing them that participation in the study was voluntary and would not affect their learning or their assessments in the course. Students were also assured that the online questionnaire was anonymous and confidential. Students were advised that consent was implied when they commenced the online questionnaire, however, they could withdraw anytime during completion of the

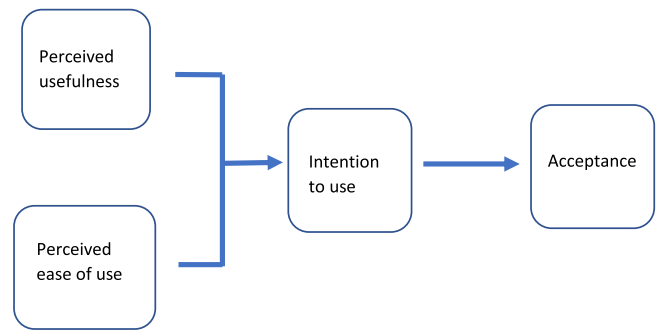


Fig. 2. Technology Acceptance Model.

questionnaire. Thereafter, their data could not be withdrawn. On the last day of the simulation laboratory sessions, students were given time to complete the online questionnaire that was accessed via a QR Code and administered by the University's Survey Tool, an online survey instrument developed and stored in the university's shared drive.

5.3. Data collection and analysis

5.3.1. Instrument

The data collection tool was adapted from the original TAM model (Davis, 1989). Davis (1989) suggests that there are two key TAM factors that determine whether a technology system will be accepted by its potential users: (i) PU and (ii) PEU. The key feature of this model is its emphasis on the perception of the potential user.

The TAM instrument consisted of 19 questions related to PU (6 items), PEU (6 items), Intention to Use (4 items), and Acceptability (3 items). The questionnaire items used a 5-point Likert scale of 1 (strongly disagree) to 5 (strongly agree) to respond to the statements in the questionnaire. A higher score signifies higher PU and higher PEU, which, according to Davis (1989), determines the person's intent to use the new technology. The reliability (Cronbach's alpha) of PU is 0.89 and 0.87 for PEU in the TAM questionnaire (Shahrabi et al., 2013).

The questionnaire also contained basic demographic questions (5 items) and an additional free text box for students to offer comments about their use of the system (Table 1).

5.4. Data analysis

Data were cleaned in Microsoft Excel before entering into SPSS V26 (IBM Corp, 2019). Statistical techniques included descriptive analysis to report sample characteristics and scale results, and Pearson correlation analysis for scale properties. Missing data range between 0 and 6 in some of the variables and pairwise deletion was applied with the missing data as the total percentage was $\leq 0.01\%$ (Enders, 2022). The statistical significance of the data analysed was described as $p < 0.05$. The items in the questionnaire were analysed using descriptive statistics, percentages for all interval-scale variables, and mean as a central tendency measure.

6. Results

6.1. Participant characteristics

Of the 530 nursing students enrolled in the clinical course, 433 completed the online questionnaire (82% response rate). The majority of respondents identified as being female (89%), aged between 20 and 35 years old (70%), and enrolled as an Australian domestic student (83%). More details on participant characteristics are presented in Table 2.

6.2. Student perceptions of Interactive Simulated Electronic Medical Record

The mean for acceptance (4.29) was higher than the mean for PU, PEU, and intention to use. The low standard deviations demonstrate the consistency of responses. Table 3 shows the summated mean of subscales and item variance values for the ISEMR system according to PU, PEU, intention to use, and acceptance. From the analysis, the result showed a near-symmetrical distribution indicating zero skewness.

Significant correlations were found among all four dimensions of the electronic medical system. Table 4 displays the results of Pearson's correlation analysis for relationships among the PU, PEU, intention to use, and acceptance.

7. Discussion

The purpose of this study was to explore nursing students' intention to use and acceptability of a purposefully developed Integrated Simulated Electronic Medical Record (ISEMR) learning tool in their nursing education. The ISEMR was created as a tool for supporting students' acquisition of informatics competency and to enhance their readiness for future practice in digital health environments. This project took place in the simulation laboratories on four regional campuses of the study site, established laboratories where interactive learning environments are commonplace.

The results demonstrate that the nursing students recognised that the ISEMR system is useful for and easy to use whilst learning. The most significant factor for intention to use and acceptability of the EMR system by these students was PU.

Whilst an ISEMR may not be the exact system students will use in the clinical setting once they have graduated, identifying acceptability and intention to use a simulated electronic tool bodes well for students' future acceptance and readiness to use electronic tools in professional practice. According to Cheah, Jusoh, Aung, Ab Ghani, and Rebulan (2022), the PEU influences the acceptance of the

EMR system, which is seen from our result. The use of the TAM in this study seems to sufficiently explain the nursing students' intention to use the ISEMR system, which may lead to actual changed behaviour (Davis, 1989).

According to our findings, the nursing students' PU is the most important factor for students' acceptability of the ISEMR system. However, PU of any digital or electronic learning systems can be a consequence of factors (external variables of the participants) such as characteristics, knowledge, familiarity, and equipment, for instance, internet connectivity and computer hardware (Kowitzlawakul et al., 2013; Richardson, Lawrence, Schoenthaler, & Mann, 2022).

In the online questionnaire, there was an additional free text box for students to offer comments about their use of the system. Most of the students (86.2%) reported challenges with the equipment in the lab, specifically the computers in the lab and internet connectivity. This finding may be the reason the question "Using the Electronic Medical Record would improve my learning experience during the simulation laboratory" received a low score. Computer equipment is critically important in implementing EMRs as a teaching and learning tool. The successful implementation and operation of EMR systems depend on the quality, reliability, and suitability of computer equipment (Petrides et al., 2017). For a simulated EMR to be as effective a teaching and learning tool as it can be, the functionality of the laboratory must meet these requirements.

Therefore, these external variables should be carefully discussed when assessing the PU of any digital or electronic learning systems. Recognising the contributing factors of PU can add to the support and improve the success and efficiency of any digital or electronic learning systems.

The study has shown that nursing students who perceived that the ISEMR system is beneficial to them also consider that it was easy to use. The ISEMR system was created using a straightforward and minimally complex method. For instance, all patient record tabs were self-explanatory, the record was easy to navigate to find necessary content, patient data and forms required for electronic documentation, and the ISEMR developer was available to

Table 1
Technology Acceptance Model Questionnaire.

	1	2	3	4	5	n/N	Mean	SD
Perceived usefulness								
1. Using the Electronic Medical Record would enable me to accomplish the tasks more quickly	16	15	35	206	157	429/433	4.10	0.955
2. Using the Electronic Medical Record would improve my nursing skill performance	12	24	53	197	142	428/433	4.01	0.965
3. Using the Electronic Medical Record would improve my learning experience during the simulated laboratory	11	44	81	208	85	429/433	3.73	0.978
4. Using the Electronic Medical Record would enhance my effectiveness in the simulated laboratory	8	12	26	207	175	428/433	4.24	0.834
5. Using the Electronic Medical Record would make it easier for my learning	8	12	31	196	183	430/433	4.24	0.848
6. I find the Electronic Medical Record useful in my career	8	8	33	206	172	427/433	4.23	0.819
Perceived ease of use								
7. I find the Electronic Medical Record easy to use	8	1	14	191	219	433/433	4.41	0.738
8. I find it easy to get the Electronic Medical Record to do what I want it to do	16	15	35	207	156	429/433	4.10	0.955
9. I believe learning the Electronic Medical Record in the simulated laboratory will help me adapt to digital technology	12	24	53	197	142	428/433	4.01	0.965
10. My interaction with the Electronic Medical Record is clear and understandable	11	44	81	208	85	429/433	3.73	0.978
11. It would be easy to be skilful at using the Electronic Medical Record	8	1	14	191	219	433/433	4.19	0.834
12. I find the various functions in the Electronic Medical Record are well-integrated	8	1	14	190	220	433/433	3.96	0.848
Intention to use								
13. I am completely satisfied in using the Electronic Medical Record for documentation	14	8	32	206	173	433/433	4.17	0.819
14. I am confident in using the Electronic Medical Record for documentation	8	4	13	191	217	433/433	4.38	0.738
15. It is easy to share information of the case studies using the Electronic Medical Record	11	44	81	208	85	429/433	3.73	0.978
16. I find the various functions in the Electronic Medical Record to be well-integrated	8	11	26	207	181	433/433	4.19	0.834
Acceptance								
17. I would use the Electronic Medical Record to document clinical findings in the simulated laboratory	8	12	31	196	186	433/433	4.21	0.848
18. I believe using the Electronic Medical Record in the simulated laboratory will increase the quality of nursing education	8	8	33	206	178	433/433	4.17	0.819
19. I would use the Electronic Medical Record in my patient care and management whenever I have the opportunity	8	1	14	191	216	430/433	4.41	0.738

Legend: 1 – strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 – strongly agree.

troubleshoot any issues identified by students or staff. This level of support might have eased stress the nursing students may have had when attempting to learn new skills and practise using the ISEMR. The findings of our study are comparable to the past research that utilised the TAM framework in the educational setting (Chow, Herold, Choo, & Chan, 2012; Chow et al., 2013).

PEU and PU are the vital factors for intention towards using the ISEMR system. Previous studies rated PEU more significant than intention towards using (Chow et al., 2013; Kowitlawakul, 2011), which is different from our result. This may be because in our study, the ISEMR system was implemented as part of the course and formed part of the practise and self-directed learning during tutorials. The students view the ISEMR system as their accomplishment that would advance their electronic documentation capability. Consequently, the perception of usefulness is probably having an influence on intention to using than PEU. Nevertheless, further exploration on this feature will be required.

As stated previously, PU was shown to be vital on students' intention to use. Our results aligned with previous research that used TAM in examining students' uptake of technology in the educational environment in other situations, such as gaming (Hwang & Chen, 2022) and e-learning (Gurban & Almogren, 2022). Previous studies (Arghashi & Yuksel, 2022; Kowitlawakul, 2011) found PU to be the determining factor in envisaging the intention to use a specific technology following the TAM framework in healthcare research. This suggests that for healthcare personnel to accept the technology, the usefulness of the technology is a vital determining factor.

For the students in our study, PU is a vital determinant factor on their acceptance of the bespoke ISEMR ($r=0.872$, $p < 0.01$). Although 67% of students had no experience with the EMR during their prior clinical placements, 92% of them were aware of the use of EMR in the hospitals, nursing homes, and medical centres. The project thus met one of the learning objectives of the course which is acquiring digital skills through the bespoke ISEMR. It provided opportunities for the students to experience electronic documentation to improve their competence and confidence with the technology before clinical placements.

Another reason for the students' acceptance of the bespoke ISEMR could be that these are second-year students, knowing that they would soon be commencing their acute clinical placements where the EMR is part of the requirement of practice. The bespoke ISEMR is only implemented in one second-year clinical course and most of those students would not have completed any lessons on EMR or digital documentation before this course. When the students

Table 2
Participants' characteristics (n = 433).

Gender	Female – 383 (88.5%) Male – 50 (12.3%)
Citizenship	Domestic – 358 (82.7%) International – 75 (17.3%)
Age	<20 = 39 (9%) 20–25 = 152 (35%) 26–30 = 95 (22%) 31–35 = 56 (13%) 36–40 = 34 (7.8%) 41–45 = 31 (7.2%) 46–50 = 18 (4.2%) 51–55 = 4 (0.9%) 56–60 = 4 (0.9%)
Are you aware of the use of Electronic Medical Records in hospitals, medical centres, and nursing homes?	Yes – 398 (92%) No – 35 (8%)
Do you have previous experience with Electronic Medical Records either in a workplace or simulated laboratory environment?	Yes: workplace – 141 (33%) Yes: simulated laboratory environment – 0 (0%) No – 292 (67%)

Table 3

Descriptive statistics (mean and variance) for the Electronic Medical Record system: perceived usefulness, perceived ease of use, intention to use, and acceptance.

Dimensions of EMR	Number of items	Item mean	Item variances
Perceived usefulness	6	4.09	0.753
Perceived ease of use	6	4.12	0.721
Intention to use	4	4.15	0.695
Acceptance	3	4.29	0.717

EMR – Electronic Medical Records.

are out on clinical placements, most of them are not provided with any digital documentation training on the EMR (Hansbrough, Dunker, Ross, & Ostendorf, 2020; Nagle, Kleib, & Furlong, 2020). This demonstrates the importance of including digital technology in nursing curricula in preparing work-ready graduates.

The responsibilities of a registered nurse are multifaceted, and nursing education must equip newly graduated nurses to navigate the intricacies of the healthcare landscape, encompassing the adoption of EMR. The shift to the digital world has ushered in a whole new set of expectations for nurses, particularly in ensuring the delivery of secure patient care within today's healthcare settings (Meum, Koch, Briseid, Vabo, & Rabben, 2021). Incorporating EMR programs into undergraduate nursing curricula will enhance nursing students' abilities in critical thinking and decision-making, ultimately leading to enhanced patient care and better identification of patients in deteriorating conditions (Mollart et al., 2020).

All other clinical courses in the Bachelor of Nursing program in this university are still documenting using paper charts. Further research comparing acceptance and intention to use a purposefully developed ISEMR among first-, second-, and third-year students could enhance our understanding in terms of timing the introduction of the ISEMR into the curriculum and perhaps scaffolding principles of health informatics across the curriculum. It would also be interesting to explore if students retain the knowledge and understanding of the principles of health informatics and use of the EMR from the time they are taught in the simulation laboratory to the time when they are expected to apply their understanding on their clinical placements.

8. Limitations

This study has some limitations worth mentioning. First, although the participants were students enrolled in the course, they were volunteers for the study and therefore there was a risk of self-selection biases. With a response rate to the questionnaire of 82%, it is less likely this bias will affect the results (Peter & Roberts, 2022). Second, the two key determinants: PU and PEU in the TAM questionnaire are influenced by the external variables of the participants and equipment. As this study was conducted in the educational environment, there may be more than one aspect that affected the two key determinants in the TAM questionnaire. Additional study on external variables, for instance, participants' prior knowledge and understanding of the ISEMR, equipment availability in the simulation laboratory, good internet connectivity, and support available to the participants, is required. One last limitation was the disparate use of the ISEMR by students. As the ISEMR is cloud-based, good internet connection is essential. Participants with poor internet connectivity at home could only practise and use the EMR when they are on campus or during simulation laboratory sessions. This has an influence on the participants' fluency and skill in the ISEMR and may have influenced their perceptions of the ISEMR. The quality and consistency of stable internet connectivity in regional areas remain a persistent issue for students studying off-campus despite Australia's national broadband infrastructure plan (McGrath, Matthews, & Heard, 2022).

Table 4

The correlations among perceived usefulness, perceived ease of use, intention to use, and acceptance scores for the Electronic Medical Record system.

Dimension	Correlation coefficients and significance	Perceived usefulness	Perceived ease of use	Intention to use	Acceptance
Perceived usefulness	r	1			
Perceived ease of use	p				
	r	0.991 ^a	1		
Intention to use	p	0.01			
	r	0.940 ^b	0.949 ^b	1	
Acceptance	p	< 0.01	< 0.01		
	r	0.872 ^b	0.881 ^b	0.902 ^b	1
	p	< 0.01	< 0.01	< 0.01	

^a Pearson correlation coefficient is significant at the 0.01 level (2-tailed).^b Pearson correlation coefficient is significant at < 0.01 level (2-tailed).

9. Conclusion

Encouraging a positive approach towards the EMR will encourage nursing students' acceptance of the EMR in the nursing curriculum. This study found that students' approach towards technology: PU and PEU are the most dominant factors for intention to use. The findings from this study will pave the way for future integration of health informatics in nursing education. Future study will involve integrating the EMR across all academic years in the Bachelor of Nursing program to better prepare the nursing students for their roles in our rapidly growing technologically influenced healthcare system.

Authorship contribution statement

Linda Ng: Conceptualization, Methodology, Project administration, Funding acquisition, Formal analysis, Data curation, Writing – original draft. **Sonya Osborne:** Writing – review & editing. **Rob Eley:** Writing – review & editing. **Anthony Tuckett:** Writing – review & editing. **Jan Walker:** Resources.

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Ethical statement

This study has received ethics approval by The University of Southern Queensland Ethics Review Committee (H19REA178). This study has also conformed to the provisions of the Declaration of Helsinki. Date of approval: 10 July 2020.

Conflict of interest

We have no conflict of interest to declare.

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