

Advancing Nursing Informatics Through Clinical Placements: Pilot Study

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Abstract. Work integrated learning in the space of nursing informatics is a new concept in Australian nursing curriculum. This study examined nursing students' experiences in the pilot nursing informatics clinical placement centered on electronic medical records, their use in patient care and clinical decision making. Students completed reflective diaries of their learning during the four-week placement. Data was explored by thematic analysis. Emergent themes included: importance of adequate training in using EMR; impact of EMR on nursing workflow and patient care; shaping future career choices; forming rewarding relationships; and potential for improvements. These themes will be used to enhance teaching and learning opportunities as this pilot placement evolves into permeant part of the nursing curriculum.

Keywords. Work-integrated learning, nursing informatics, graduate entry to practice nursing, electronic medical records

1. Introduction

Rapid deployment of electronic medical records (EMR) in Australian healthcare is transforming the way nurses deliver person-centered care [1]. In the context of this study, EMR are considered as digital versions of patient medical records containing information created and utilised within a single healthcare organization, such as a hospital, used by that setting for diagnosis and treatment [2]. Currently, the nursing workforce is trained by their employers to build skills and knowledge to effectively use EMR. In contrast, only a small portion of nursing students encounter EMR for the first time during clinical placement with healthcare providers as part of work-integrated learning (WIL). This is due to a) the current curriculum not containing nursing informatics content and b) absence of pedagogically driven simulated EMR-practical component reflecting real life technology.

To promote the development of career pathways into nursing informatics and build capacity amongst digitally capable nursing workforce, we hypothesized that creating WIL environments, that will provide nursing students with early exposure to nursing informatics in real-life settings, is required. Thus, a pilot elective student clinical placement that focused on exploring the use of EMR in direct patient care, understanding how nurses use EMR to manage workflow, how EMR data is used to make clinical

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decisions, and how EMR impacts nursing workflow was developed. A systematic approach was taken to teach, assess and evaluate this approach to WIL through student feedback on the experiences gained during EMR-centric WIL.

2. Methods

This is a prospective qualitative study using phenomenological approach aimed at generating a description of student experiences of a pilot clinical placement that encompassed time using EMR at the patient bedside and being part of the clinical nursing informatics team. Over the four-week placement, students focused on learning to use EMR, using EMR patient-specific data to make clinical decisions, observing nursing workflow in the presence of EMR and documenting nursing workflow in the presence of EMR.

A purposive selection of 4 final year graduate-entry-to-practice (Masters) nursing students undertaking an elective placement in the final semester of their two-year program was undertaken. Selection criteria included: a) two students were to have previous qualifications in information technology and two were to have no previous education in information technology; b) no students were to have prior exposure to EMR. This research was approved by the University of Melbourne Human Research Ethics Committee Approval Number: 1955953.1

Domains of competence and associated learning were adapted from study by Pontefract and Wilson [3]. Australian Nursing Standardized Assessment Tools [4] with behavioral cues adapted to reflect EMR competencies was used to assess student competencies. All participants received a brief on the purpose, structure, expected learning outcomes and assessment of the clinical placement. Each participant was introduced to the format of the structured questions in the reflection diary. The students were asked to complete a reflective diary at least twice a week (40 hour working week). All diaries were collected at the end of the clinical placement by the researcher not involved in the student's clinical placement learning or assessment. Pseudonyms were assigned to each participant. Data analysis was done using thematic content analysis to identify common themes using NVivo qualitative data analysis software (Version 12Plus QSR International Pty Ltd., Doncaster, VIC, Australia). All transcripts were independently coded by two research members. The consistency and rigor in analysis, codes and themes derived were reached through discussion within the research team to reach the consensus of the analysis and interpretation of the data [5]. Verbatim extracts were provided to illustrate the content of each study theme.

3. Results

Two male and two female students agreed to participate in this pilot placement. Of these students, one male and one female student had previous undergraduate qualifications in information technology and were previously employed in the information technology industry settings. One student was a native English speaker and three were from culturally and linguistically diverse backgrounds, which may be reflected in slight language anomalies in some quotations. Thematic analysis of student diaries revealed five major emerging themes. These themes are: 1) importance of adequate training in using EMR; 2) impact of EMR on nursing workflow and patient care; 3) shaping future

career choices; 4) forming rewarding relationships; and 5) potential for improvements in the design of the WIL experience. Representative italicized quotations are presented as evidence for each of these themes. Where text was truncated, three full stops are used (...); however, truncation of the results did not change the meaning of the results.

3.1. *The Value of EMR Training*

Prior to EMR training students were allocated to nurse preceptors for three days where they had a chance to see how nurses use EMR to deliver person-centered care and were given an opportunity to use EMR. Participant 2 describes the use of EMR without training as *'On the first ward day, I was not educated on the EMR system and felt lost in the middle of all the EMR functions, charts, and notes. I was quite confused and nervous when using the system.'* However, once students received their EMR training from the EMR educator, Participant 2 reported: *'... post EMR education, I was able to navigate EMR easily to locate the essential information for caring my patients and comfortable of using it without fearing making mistakes.'*

3.2. *Insight into Capacity of EMR in Modulating Nursing Workflow*

During days when students were examining nursing workflow and interaction with EMR, they had an opportunity to observe the extent to which the EMR system contributed to workflow dynamics, including time spent on written documentation, and whether it enabled nurses to spend more time with patients. Participant 1 stated: *'...seeing how the data can relate to patient care or actually being able to visualize the data as a whole was really eye opening.'* Students noted that each nurse tended to use EMR differently in how they managed their workload or how they used tools available in the EMR to manage patient care. All students commented on nurse's capacity to multitask in the presence of EMR and appreciated the opportunity to learn this through observation. Participant 2 reported *'I stood back from a care giver perspective to a pure observer enabling me to grasp how nurses process information, tasks in each different approach and time management skills which is a rare opportunity...'*

3.3. *Shaping Future Career Choices*

Students who previously completed qualifications in information technology systems reported more on EMR's navigation, capacity to provide alerts, reminders which they felt improved timing of medication administration, nursing time planners and the value of using 'nursing hub' to plan patient care. They also reported on the value of readily available real-time and historical patient data, the value of not seeing hand-written notes difficult to interpret as well as not needing to move patient medical records from one ward to another as patients needed to be transferred. These graduates seemed to view their increased capability in using EMR as an attribute benefiting their future career choices. For example, Participant 3 stated: *'EMR is the future of healthcare setting. This will strengthen my role as a healthcare professional as I start my professional nursing career armed with the knowledge of using EMR.'* whereas Participant 2 stated: *'... receiving introduction about EMR build is interesting which enables me to think about my future career to take on nursing informatics as one of the potential career pathways.'*

It is noteworthy that time spent on EMR but not providing direct 'hands-on' nursing care to patients was viewed by all four participants as time lost from their clinical

practice. They felt to be missing out on their clinical education when they reflected on their peers who did not undertake the elective placement focused on nursing informatics. For example, Participant 2 stated: *'I was worried that I had ward days with this combined nursing informatic placement would make me behind on my clinical knowledge and skill development comparing to other students.'* while Participant 4 stated: *'I feel that I may be missing out on valuable ward experience as a nurse...'*

3.4. Forming Rewarding Relationships

All four participants reported that they made positive relationship with their peers, nurses and clinical educators throughout the placement and forming valuable relationships with patients and their carers during their time at the patient bedside. However, when either encountering those same patients or new patients during their days on analyzing nursing workflow in the context of EMR, students reported internal conflict as they felt that they could not provide nursing care as they were in a 'different role today'. This is evident in the statement of Participant 1: *'I still did feel a little frustrated that I was not able to participate and contribute in patient care at times.'*

One participant reported experiencing a negative episode with a ward educator during the pilot placement that revolved around perception of student not spending enough time at the bedside but spending time in data collection and analytics: *'... my ward educator denied me feedback. Even after my explanation to the ward educator that I spent time on EMR and weekend shifts, I was told that they have not seen me working in the ward'* (Participant 3). This participant reached out to the EMR clinical educator and the situation was mediated through re-engaging with the clinical educator to further clarify the purpose of this hybrid elective placement.

3.5. Student Suggestions for Improvements

Students felt that the nature of their clinical placement needed to be better communicated to clinical educators and bedside nurses to minimize confusion surrounding the purpose of the new clinical placement. Greater clarity around learning objectives and greater details in the description of the clinical placement were also suggested. Students also felt that the component centered on EMR data analytics required clearer description and methodology and advocated for the greater involvement between the university and the clinical placement provider. Overall, students highly valued this experience and felt that their participation in the pilot placement will support refinements to the proposed WIL, which they perceived had high value to the future of the nursing profession.

4. Discussion

For most Australian nursing students, their first encounter with health information technology systems such as EMR and health informatics is during their WIL experience. To correct this, education providers have engaged in developing education strategies that can develop digitally-ready workforce. In the case presented here, the engagement occurred between a university and an EMR-equipped clinical placement provider as means of addressing this shortcoming. The pilot placement reported here is an attempt to address these curriculum needs through integration of WIL, evidence-based learning

objectives [4] and behavioral cues [5] that guided assessment of those learning objectives.

Areas for improvement clearly exist. Clarity of the learning objectives and communication of those to all stakeholders requires improvement as does changing perceptions of nursing informatics by students and ward nurses. For example, student perception that spending time in EMR data analytics was time away from clinical nursing (providing direct patient care) needs to be addressed. Similarly, belief of some staff that only a bed-side nurse is a real nurse, also requires addressing. These issues are not unique to this placement model [6]. Collective effort needs to be made to recognize that nurses do many roles, including nursing informatics and that these roles need to be accepted as equally important as bedside nursing in impacting the patient's journey through the health system.

5. Conclusion

Feedback provided by students will be used to refine currently proposed model. Further engagement with ward staff is also required. Nevertheless, providing a clinical placement with integrated nursing informatics to students during their entry to practice degrees promises to be at least one strategy of increasing the visibility of nursing informatics as a career pathway.

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