Issues for Deployment of Mobile Learning by Nurses in Australian Healthcare Settings

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Abstract. Undergraduate nursing curricula are being redesigned to include strategies for deployment of mobile learning as a legitimate nursing function. A recent online survey exploring the use of mobile learning by undergraduate student nurses revealed barriers, challenges, risks, and benefits to using mobile learning at the workplace. Inability to access mobile learning at both individual and organisational levels impacted on student learning and teaching opportunities. Students also indicated that educational preparation for ensuring appropriate use of mobile learning is necessary to guide learning and teaching *in situ* at point of care. This highlights the need for the development of policy to guide best practice that will enable this new pedagogy to be fully utilised for learning and teaching in healthcare settings. Until governance of mobile learning in educational and healthcare settings in Australia is addressed, harnessing the indubitable benefit of mobile learning and teaching will be unachievable.

Keywords. Mobile learning, undergraduate nurses; learning and teaching; governance; deployment

1. Introduction

Recent studies exploring the use of mobile technology and mobile learning (mlearning) indicate improved efficiencies can contribute to improved health care of patients by health professionals. However, risks and challenges have also been reported by end-users [1, 2]. As undergraduate nurses are the next generation of health professionals they must be provided with guidance and support in the use of mlearning in the clinical setting. This research explored current nursing students' (students) perception of the opportunities and barriers of using mlearning at point of care. The findings provided direction for developing contemporary and congruent undergraduate nursing curricula.

The Australian competency standards for nursing and midwifery are currently under review [3]. Previous standards have included no specific requirement for nurses' to be competent in health technology and informatics. However, since 2012 the inclusion of health technology and informatics has been a mandatory requirement for accreditation of undergraduate nursing courses in Australia [4]. An ANMAC [5] additional note outlined that health technology and informatics needed to be embedded at a technical, contextual and emancipatory level. This clearly articulates that all stakeholders need to understand the requirements and integrate health technology and

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informatics to prepare beginning level nurses in information literacy, knowledge, skills, attitudes and behaviour to ensure work-readiness.

In response to requirements of accreditation [5] sequencing of new nursing curricula is necessary to reflect the complexity of using health technology and informatics in the workplace [6]. Proficiency in using eportfolios, understanding electronic health records, and digital communication must be achieved [5]. Academics, educators, and supervisors will have to develop the proficiency required for using health technology and informatics during professional practice within healthcare settings [5]. The complexity of health technology and informatics use, level of knowledge and skills needed requires scaffolding throughout curricula to ensure critical thinking occurs with regard to the legal and ethical use of emerging technology, including social media [5].

Students need to understand the complexity of socio-political and technical points relating to appropriate use of mlearning. Currently there are a number of issues that reduce student's ability to access mlearning in educational or healthcare settings. Students need to understand the implications of inappropriate use. New nursing curricula must include knowledge of operational requirements of using mobile devices in education and healthcare environments [7].

Studies on the use of mobile technology have indicated there are a range of barriers, challenges and risks that need to be overcome before mlearning can become a legitimate nursing function at point of care [8]. Access to digital devices as an educational tool in healthcare environments in Australia is limited due to a range of individual, organisational, and systems level impediments [9]. Unless these impediments are ameliorated, the deployment of mlearning will continue to be slow. Currently a range of *workarounds* are used that can impact upon mlearning becoming a legitimate nursing function [10]. Non-compliance with organisational policies perpetuates poor role modelling and hinders appropriate social referencing that occurs when students observe and mimic their nurse educators' behaviour [1]. Utilising mobile devices covertly for learning and teaching in healthcare settings creates tension for end-users and perpetuates the mlearning paradox [10]. Harnessing the opportunity of mlearning in educational and workplace settings will remain problematic if governance regarding using mobile devices by nurses is not addressed [11].

2. Methods

This study comprised an online survey of undergraduate nurses administered while they were undertaking work integrated learning at a range of healthcare settings in two Australian states. This cross-sectional study captured student's self-reported access to Internet or device-based resources, using a mobile device, at the workplace. Participants were recruited by email. The survey contained 22 items relating to use of mobile devices to access information. There were three free text-questions seeking their opinions regarding perceived opportunities and barriers relating to using mobile devices during work integrated learning (or PEP as it is known at this university). Responses were coded by two researchers independently and then cross-checked to ensure validity. Human research ethics was approved (H0013729) prior to commencement of the study. Consent was implied by completion of the questionnaire.

3. Results

Of the students who indicated that they owned a mobile device (N=47) over three-quarters (n=40, 34 and 35) provided responses to each of the free text questions. Respondents were asked to 1) describe any opportunities they believe could impact on the use of mobile devices during PEP; 2) list their perceptions of barriers to using mobile devices; and 3) comment about access or the use of mobile devices during PEP. From the guided questions, two key themes emerged: 1) enabling access to resources for clinical or educational purposes; and 2) professionalism issues.

3.1. Enabling access to resources for clinical or educational purposes

Students indicated use of mobile devices enabled easier access to evidence-based resources on the Internet, agency Intranet or loaded on the device. One student stated "The laptop is time and space-consuming to set up. Internet access on mobile phones are small and more efficient" or "their ability to be transported from one place to another" and "allowed me to jot down something I was not familiar with and in my break use my smartphone to look it up." Respondents also indicated that access to a mobile device was useful for communication. Comments included "fast access to communicate with other services/multidisciplinary team" and "quick reference tool… alarm, clock, calculator, stopwatch, reminder." Students indicated access to 'best-evidence practice' information was valuable to them. For example: "very good for intranet usage for evidence based protocols and guidelines" and "mobile technology can be very fruitful because it can be used for clearing up any confusion created." Respondents listed resources they access using a mobile device including: medication management resources, e-textbooks for "looking up diseases and understanding pathophysiology", and university learning management systems or information.

3.2. Professionalism issues

Benefits related to "patient perceptions/engagement" or others of nurses using mobile technology. One student stated "I think a tablet device would look more professional than pulling out a mobile". They indicated that access to mobile devices enabled learning and teaching opportunities that facilitated efficient and effective time management that could positively impact on patient care and learning and teaching opportunities. Comments included "increased access to resources = decreased risk of error eg meds" and " having a device capable of quick reference and look up for terms / drugs/references/pathophysiology etc. may be beneficial while on placement. Physical location of the appropriate resources, can at times, be difficult and time consuming."

There was enthusiasm for enabling the use of mlearning. "My facilitator carries a mobile phone which we used because they could not answer my question. So we went to the tearoom, Googled the topic and we both discussed the answer. This assisted in my learning which allowed me to reflect with my preceptor". One student stated "It is a really great resource to ponder and verify when we are in doubt" and "I think when they are used appropriately they can be an invaluable tool to aid learning and coordinating effective and efficient patient care". One student commented "using the portable or mobile technology, provided that it is affordable, will have a very positive outcome during PEP such as clarifying doubts and revising the subject related activities etc". "The technology has grown in such a way that it should be useful to everyone".

Comments about proficiency of ICT use pertained to both clinical supervisors and students. One student commented "encourage IT illiterate preceptors to accept that times have changed and IT is a really useful tool to support clinical practice".

Responses indicated there were barriers including lack of presence, disapproval, distraction and inappropriate use, including resistance by users. Presence included "people looking at the device too much instead of listening/eye contact" and "a barrier would be the social etiquette involved with students using such devices within the PEP setting." Students indicated "patient perception of their use in healthcare settings may be negative, thus impacting on the therapeutic relationships held between them and their healthcare professional". One respondent stated "other health professionals might believe I was neglecting my patients and patients might believe I was neglecting them!" Comments about distraction included "maybe distracting for both staff and patients" and "major distraction with access to social media."

They indicated that organisational and university policy "clearly instructs students NOT to use our mobile phones during PEP so as not to create the impression we are texting or on Facebook" and the "hospital would not allow it and will reprimand you" or "facility policy often prevents use". They were cognizant of the "dangers of privacy with patient information and care" and the "risk of breach of patient confidentiality".

Student comments focused on "battery life, screen size", "availability of charging ports", "speed of the Internet" or devices loaded with resources "may not be regularly updated". Students indicated that theft or loss of the device were a concern. Other comments related to professionalism and included "I noticed most of the doctors had a device in order to access information/patient results/or clarification of pharmacology" and "patients and families could think we are busy talking to our friends or doing something that is not related to caring patients." Respondents also indicated "it may look unprofessional to be seen using mobile technology as it may not be assumed it is being used for educational purposes". Concerns about inappropriate use of mobile devices such as using it as a torch for examining patients were also raised.

4. Discussion

Implications for implementing new nursing curricula must be addressed in practice to ensure the next generation of nurses are equipped to optimally utilise health technology and informatics at graduation. Embedding health technology and informatics and appropriate sequencing of knowledge, skills, attitudes, and behaviour development of students requires leadership from the nursing profession to change current governance towards the use of mobile devices in both educational and healthcare environments [9]. Decision making at an organisational level about use of technology for educational purposes will require innovation in planning and implementation, taking heed of lessons of the past such as inadequate consultation; lead-time; training; inappropriate formats; and enabling access to the technology for practice [1]. Minimising resistance at individual and organisation levels will be required for mlearning to be effectively deployed. Facilitation of a change in culture and perception, to enhance understanding of the value of accessing information in real-time, will be integral to success. The use of mlearning as an adjunct to traditional learning methods can assist with ameliorating the theory-practice gap by enabling access to information at the point of need.

Students are aware of, and understand the potential barriers, challenges, risks, and benefits associated with mlearning *in situ*, at point of care. They clearly articulated an

understanding of the need to ensure positive behaviour was employed when using mobile devices in the presence of colleagues and patients. Authors report that the majority of patients believed the use of mobile devices by health professionals was work-related [12]. Clearly, students believed that learning in real-time could improve their understanding and clarify queries they have while caring for patients. Now is the time for Australian nurse leaders to engage in promoting changes in governance in education and healthcare settings that can enable mlearning *in situ*, at point of care while ensuring patient safety is maintained.

5. Conclusion

Nursing students demonstrated an understanding of the impact of enabling the use of mobile devices for mlearning in healthcare environments. They recognised there is a need for educational preparation for mlearning within the workplace. Most students were enthusiastic about being able to use mlearning, but understood professional behaviour needs to be modelled when mlearning is deployed. They also have an expectation their educators and supervisors will be competent in its use. Deployment of mlearning as legitimate nursing function requires embedding the use of health technology and informatics in the undergraduate curriculum and nursing leadership to support its use in educational and healthcare environments. Only when there is a change in organisational governance that enables mobile devices to be used for learning and teaching, will the Accreditation Council achieve its aim of promoting and supporting competency, in health technology and informatics in nursing in Australia.

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