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Curricula challenges and informatics competencies for nurse educators

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Abstract. Nursing informatics competencies are fundamental to nursing practice in all areas of nursing work, including direct patient care, administration and education. The recent activity relating to the development of nursing informatics competencies for beginning level nurses has exposed a paucity of understanding of the requirements for nursing informatics competencies for nurse educators. So, whilst the challenge of educating faculty to teach informatics has been limited, research into such competencies is required to meet this challenge. This paper describes the challenges and issues associated with nursing informatics competency development for faculty, outlines the capabilities of faculty, and presents a vision for the future of informatics education for faculty. The final requirement of the introduction of new competencies is to determine appropriate evaluation measures that reflect the requirements of all stakeholders.

Keywords. Informatics, competency, nurse educator, curriculum, health information technology

1. Introduction

Nurses' informatics competencies have been studied for over ten years [1-3]. There exist several studies that outline expected nursing manager's informatics competencies [4-6]. Also, nutrition informatics competency studies have been published [7]. Different requirements for nursing programs and curriculums have been introduced [8, 9], including those focusing on informatics [10]. Yet, a consensus among nurse educators regarding informatics competencies has not been reached. In addition, the identification of specific competencies, such as informatics competencies, have yet to be connected to specific areas of practice. Finally, the informatics competence of the faculty members has seen limited research, although this is deemed to be a critical factor limiting the development of informatics abilities in the workforce. The objective of this paper is to: (1) describe some of the challenges and issues associated with nursing informatics competency

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development among faculty, (2) outline the capabilities of faculty, and (3) present a vision for the future of informatics education for faculty into the future.

We begin by defining the term competency and some of the nursing initiatives aimed at developing nursing informatics competencies. A competency refers to skills, knowledge, values, and attitudes [11]. Early attempts to develop nursing informatics competencies include the TIGER Initiative**,** Technology Informatics Guiding Education Reform, which began in 2004 to develop strategies and actions to improve nursing practice, education, and care with the aid of health information technology (HIT). The Tiger Summit [12] produced several recommendations for education. These include the need: (1) for informatics competencies for all levels of nursing education including undergraduate and graduate, (2) for nursing informatics competencies for education and practicing nurses, (3) to strike an educational committee to examine the integration of informatics throughout the curriculum, (4) to develop informatics specialty programs, and (5) to evaluate the baseline and the changes in informatics knowledge among nurse educators. It has also been highlighted that nursing education must be enhanced because of a constantly changing health technology environment. This is among the objectives and actions of the IMIA-NI Education Working Group [13] whose mandate is to review the scope of nursing informatics and its implication for nursing education.

The lack of knowledge about eHealth, its advantages and potential benefits for users is a significant educational challenge. The challenge includes teaching and steering not only citizens and patients, but also health care professionals [14]. Teaching health informatics and using electronic health record systems in education cannot be dependent on a teacher's or other faculty members' competencies alone. There is a need for investment by professional associations, universities and colleges in providing the educational opportunities and tools (e.g. electronic health records) so that faculty and students can learn about informatics [15, 16]. This is essential for nurse educators to develop informatics as a core competency [17, 18]. In addition to this, there is a need for nurse educators' informatics competencies to be more fully attended to [9, 19]. The final documents of specific nurse educator competencies have not been published by Tiger Initiative [20].

2. Challenges for nurse educators in nursing informatics

In informatics, the issues of state education and competence have been touched upon in studies examining competence in informatics or linking informatics to nursing curricula [21]. This has occurred in conjunction with an expanding focus on simulation pedagogy [21]. Curran [21] highlighted a concern in practicing new nursing skills, such as entering data into a patient record system and related competence in education and nursing. A number of nursing skills are emphasized in the field of nursing, but nursing informatics has not gained an independent domain where nursing education is concerned. Informatics has traditionally been treated as separate in terms of knowledge and skills.

Studies of health educators' have primarily focused on comprehensive work as educators and been concerned with examining the area of expertise in teaching or central fields of competence, such as leadership and cooperation skills. Several studies present the challenges for nursing and health care education, which should be paid attention to in order to receive high-quality teaching and patients' customer-oriented safe care [20, 22, 23]. The adoption of new knowledge and education for changes in electronic systems and used programmes in health care require new nurse educator skills in informatics, the

development of an informatics knowledge base, information retrieval and information management competencies [19, 23]. To illustrate this, Rajalahti's 2014 extension of Curran's framework is useful (see Table 1).

Table 1. Curriculum work and health educator's area of required competencies in informatics and competencies with an emphasis on informatics [19]

Curran's framework (2008)	**Evidence (studies and reports) supporting decision-making**	**The area of competencies in informatics and areas of competencies with an emphasis on informatics**
Theoretical background	Theoretical background of informatics	
Skills and knowledge in applying informatics	Skills and competence of informatics	
Competence in integrating knowledge of informatics	Informatics integration	
Caring	Patient safety care	Patient-centered care
Implementation of learning and teaching	Evidence based working, investigative work	Research, development and innovation activities
Implementation of learning and teaching	Knowledge management, self-management	Leadership and curriculum work
Human personal activities and competence, such as cooperation skills	Networking	Work in networks and management of network processes
Learning how to learn.	eLearning and teaching in different environments	Environments for implementing eLearning, different environments for learning nursing.

First, attention must be paid to the continuous changes in information management, where digital data in information systems, e-health solutions in the mobile systems, and health technology devices set the requirements. It is imperative that health educators understand the importance of, and are supported in, keeping pace with informatics related change and the implications for their students in practice. Secondly, education should produce new methods and models efficiently, economically and effectively [23]. Third, research and development competence sets challenges for health educators in a situation in which new applications and techniques are constantly being developed [22-24]. Competence in using research is the challenge [23, 24]. Constantly regenerated research data set up a challenge for the knowledge-intensive nature of health care. Rajalahti's [19] literature review and dissertation research have led to the development of competency recommendations in informatics and informatics competencies that focus on the nurse educator (Table 1).

In summary student nurses need to learn about health information technology (HIT) as part of their education and practice. Informatics must be a fixed part of today's nursing curriculum. For nursing students to be prepared to use HIT, faculty must require the use of current technology as part of class work. To meet these required informatics

competences and rapid changing challenges in health care, nursing education programs and curriculum work as well as nurse educators working in university and college settings must have flexible model of dynamically building new informatics competences.

3. Should we be talking about competencies or capabilities for Nurse Educators?

Bromley states [25; p110]: "the terms competent, competence, competency and competencies have often been interpreted as the same thing. It has been implied that competency 'is', whereas competencies are the skills to be assessed and, if successful in demonstrating these competencies, the nurse can be deemed competent". This is confirmed by Phelps et al.'s [26] work that suggests that competencies represent a simplicity of task, are prescriptive and best suited to less challenging and more stable environments than those experienced by advanced nurses or nurse educators. Watson [27] describes competencies as descriptions of abilities that do not necessarily require a high level academic achievement and considers this to potentially be an inappropriate term for nursing education skills [27]. So, whilst university undergraduate curricula must account for the core competencies it remains essential that informatics competencies are considered at a minimum level and higher level skills are incorporated, particularly in advanced education [28].

The current debate in nursing education tends to use the term capability for advanced nursing skills, including nursing education. The term capability can be used to reflect or measure the expertise of nurses who demonstrate skill levels above the entry level. Capability reflects individual's demonstrating self-efficacy and taking responsibility for their actions and education [29, 30]. According to Bromley [25; p110] capability also "promotes the pursuit of excellence in the development, acquisition and application of knowledge and skills".

In Europe, the competences have been defined in accordance with the recommendation of EQF (European Qualification Framework) [31]. The base of the framework is the competence comparability with 8-level criteria. EQF and these levels make qualifications more readable and understandable across different countries and systems in Europe. The European higher education structure emphasizes a holistic view of competence. The base of the definition for competences lies in the knowledge, skills and qualifications, which can be seen as a result of learning (a learning outcome). These point of view emphasize understanding, values, knowledge and its application. The perspective of competence required is based on the profession and society that are part of working life; i.e. the individual's ability to take advantage of their knowledge, different skills, and a combination of qualifications [19, 31].

4. Next steps

Irrespective of whether we are establishing nurse educator informatics competencies or capabilities, it is essential that effort now turns to the design and development of an evidence-based informatics curriculum for nurse educators. Currently, many nurse educators are under prepared in the requisite skills to use or demonstrate informatics technologies. Whilst they are familiar with a wide range of educational technologies, these educational technologies differ significantly from the technologies that are

associated with HIT and nursing informatics. The nursing educators' challenge of incorporating informatics into curricula was observed in 2010 by Flood and colleagues [32]. However, there continues to be a lack of research on strategies to effectively teach informatics.

As was experienced when learning technologies were introduced into nursing education, there is significant interest from educators about including informatics in their curricula, but time constraints and confidence can limit active adoption. Universities and colleges need to invest in building the skills required by the nursing faculty [33], and this work should be motivated by and supported by national nursing faculty organizing bodies (e.g. Canadian Association of Schools of Nursing, Australian Nursing and Midwifery Advisory Council) [34]. Therefore, development of faculty's skills in informatics education must be supported by the educator's department as part of standard professional development requirements.

Health takes place in the everyday lives of individuals so the importance of connectivism, as described by Honey and Proctor in Chapter 4, is elementary in that nurses need to know how to relate context to their information acquisition and sharing to ensure relevancy for their clients. This skill needs to be conveyed throughout undergraduate nursing education and so it is important that educators have expertise in assisting individual students to form networks for learning and to draw upon others' experiences, including their clients. It is also important that new graduates appreciate the diversity of clients and their wide range of understandings and desires in relation to informatics. For example, some clients will embrace new technologies in their health care whilst others may shun them. It is the nurse's role to support their client in their personal choices. Therefore, the nurse educator needs to include advocacy in relation to the use of technology as part of nursing education.

5. Implementing and evaluating education

Related to this is the need to develop a means of measuring and understanding the impact of nurse educator education on the teaching of nursing informatics students and ultimately outcomes in practice etc. There currently exist several projects internationally that attempt to support faculty development and integration of nursing informatics competencies into curricula. For example, the Canadian Association of Schools of Nursing [34] has developed nursing informatics competencies, educational resources and a national faculty peer-leader network that has conducted group (i.e. workshops, presentations) and individual learning activities with nursing faculty (individualized educational and one-on-one support sessions) across Canada. The work has been evaluated using surveys of participating faculty.

In Finland, nationally the 100% of electronic patient record system coverage and the implementation of National Patient Data Repository has influenced demands for integrating nursing informatics competencies in both nursing and nurse educator education. Documentation and general informatics for nurse educators was enhanced and training conducted in 2008-2010 through the eNNI project **(E**lectronic Documentation of **N**ursing Care – Research and Development for Creation of **N**ursing **I**nformatics Competences **i**n Cooperation with Education and Work life). Based on the project, a national network for nurse educators was established to develop nursing informatics competences [19].

In Australia, whilst the recent Registered Nurse Standards for Practice [35] and Continuing Professional Development [36] support the Australian Nursing and Midwifery Accreditation Council mandate that all undergraduate curricula must include nursing informatics [37], there has been limited engagement in the development of policies around the requirement for nurse educators to have informatics skills. In fact, the first set of informatics competencies for nurses was released through the Australian and Nursing and Midwifery Federation National Informatics Standards for Nurses and Midwives in early 2016 [38]. Whilst these standards have merit and provide direction regarding expectations for competence of nurses in informatics they are not yet ratified by any of the national professional nursing bodies. However, individual universities have commenced the development of courses for nurse educators in nursing informatics [39].

Ultimately the result of nurse educator competencies in nursing informatics needs to be measured in terms of all stakeholder groups. This involved evaluation of not only the faculty responses or increased confidence and capacity to teach informatics skills to their students. There must be concurrent research and evaluation of changes in new graduate knowledge and capability in using HIT when entering the workforce, and evaluation of whether the employing organizational needs are being met by the new graduate skills.

6. Conclusion

Progress in the development and implementation of nursing informatics competencies for nurses has gained increasing traction in most countries, but the teaching of these competencies and their inclusion in curricula is dependent upon the skills and knowledge of the faculty members who teach these components. Attention needs to shift to the development of faculty to deliver the informatics skills to assist their students to meet the required competencies. Rajalahti [19] has proposed a set of competencies for nurse educators to assist them in becoming confident and capable of delivering the nursing informatics knowledge to ensure their students achieve the appropriate level of competencies. Education for faculty must agile to enable them to cover the range of rapidly changing HIT and must be supported by their organizations. The final requirement is an evaluation strategy that considers all stakeholders in the evaluation. Evidently once nurse educator competencies have been finally agreed the subsequent piece of research required is to develop a robust evaluation framework to ensure the needs of all parties is being met.

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