Informatics: RN to BSN Students’ Perceived Competence

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Abstract

**Background:** Nurses utilize informatics to aide in providing safe, quality care to patients across the lifespan in a variety of settings; therefore, it is important that nurses have knowledge of nursing informatics. Nurses entering RN to BSN completion programs bring a range of clinical experience which often includes application of informatics. This poses a challenge for nursing faculty in designing programs to meet the needs of this specific population regarding informatics.

**Method:** In this descriptive correlational research study, data were collected from a convenience sample of RN to BSN students using a demographic questionnaire and the Nursing Informatics Competency Assessment Tool (NICAT).

**Results:** The total NICAT score supported all subjects being at the competent level or above and 37 subjects were noted to perceive themselves at the proficient or expert level.
Conclusion: RN to BSN students reported informatics competency; however, they may benefit from specific informatics content.

Introduction

Nurses utilize informatics to aide in providing safe, quality care to patients across the lifespan in a variety of settings; therefore, it is important that nurses have knowledge of nursing informatics. When designing or evaluating baccalaureate nursing programs, both pre-licensure baccalaureate and RN to BSN completion programs, the American Association of Colleges of Nursing (AACN) Baccalaureate Education Essentials serve as an important framework to ensure inclusion of curriculum content to prepare graduates to meet the expectations of various stakeholders (AACN, 2008). Included as one of the Baccalaureate Education Essentials is “Information Management and Application of Patient Care Technology” (AACN, 2008, p. 17). Students enrolled in RN to BSN completion programs are unique since they are practicing nurses and bring a variety of clinical experiences which includes utilization of informatics in diverse settings. This poses a necessary task for faculty to assess students’ knowledge of informatics and utilize this information in designing programs to meet the needs of this specific population.

Choi (2012) used the Self-Assessment of Nursing Informatics Competence Scale (SANICS), to compare informatics competencies reported by undergraduate nursing students in either a traditional pre-licensure program, RN to BSN program, or an accelerated BSN program. The SANICS is a 30-item instrument which has five subscales: basic computer knowledge and skills; applied computer skills; clinical informatics role; clinical informatics attitude; and wireless devise skills. Findings demonstrated that students in both the RN to BSN and accelerated BSN programs indicated competence in nursing informatics. Furthermore, Choi reported that RN to BSN students perceived themselves as more
Choi and Zucker (2013) administered an 86-item competency assessment to students entering a DNP program to compare self-reported informatics competencies of students in either the post-baccalaureate (post-BS) or post-master’s (post-MS) track. The assessment addressed competence in three categories (computer skills, informatics knowledge, and informatics skills). Students in both tracks reported a need for more knowledge in all three categories. Additional findings indicated competency levels were reported higher by post-BS students than post-MS students. Choi and Zucker (2013) posed that this may have been related to a higher number of post-BS students being recent graduates and might have gained more informatics knowledge in their undergraduate programs.

Choi and De Martinis (2013) and Choi (2012), reflected that higher competency in nursing informatics by specific populations of students may be related to work experience. Findings from Choi and Zuker (2013) could be viewed as being somewhat different, as post-BS students reported higher self-competency regarding informatics than post-MS students. The varying findings support the need for more research regarding examining informatics competency of nursing students in different academic programs.

Rahman (2015), developed the Nursing Informatics Competency Assessment Tool (NICAT) in response to identifying the lack of a self-assessment tool to examine informatics competency of bedside nurses. The NICAT is a 30-item instrument addressing computer literacy, informatics literacy, and informatics management skills. In developing the instrument, Rahman conducted an extensive literature search, developed questions based on the Technology Informatics Guiding Education Reform (TIGER) recommendations, and pursued evaluation of the instrument by a multidisciplinary team (2015). The NICAT is a tool that can be utilized to examine perceived informatics competency of bedside nurses allowing for assessment based on Benner’s Model of Skill Acquisition. In her model, Benner identifies a process in which nurses gain competence in clinical nursing practice and moves through levels of novice, advanced beginner, competent, proficient, and expert (Benner, 1984).
Nurses with an associate degree choosing to advance their academic preparation by enrolling in a RN to BSN program have diverse backgrounds in regards to practice area and years of experience; therefore, they are at different stages as defined in Benner’s theoretical model. Assessment of RN to BSN students’ informatics competency prior to starting a completion program is important to aid in gaining information needed for curriculum decisions. RN to BSN students are practicing nurses, thus the NICAT tool to examine informatics competency of bedside nurses would be appropriate for this population.

**Research Questions**

This descriptive correlational research project was designed to answer the following two questions:

1. What is RN to BSN students’ perceived competence of informatics?
2. Is there a relationship between various demographic variables (age, years of experience, area of clinical practice, sex, and previous academic degrees) and RN to BSN students’ perceived competence of informatics?

**Methodology**

A descriptive correlational study design was utilized for this study. Prior to initiating data collection, permission to conduct the study was obtained from an institutional review board at a university located in the southern United States.

**Sample**

A convenience sample of 39 RN to BSN students attending a mandatory face-to-face orientation required for beginning a specific program were asked to be a part of the study and all students consented to participate. The age of the sample ranged from 21 to 58 years ($M = 36.79$, $SD = 11.03$). The years of experience ranged from just completing an Associate Degree program to 26 years of experience ($M = 8.39$, $SD = 9.15$). Thirty-seven (94.9%) were female and the majority (61.5%) reported being employed in acute care. Five reported having a BS in another field and one reported having a MS in another field.

**Instruments**

The instruments consisted of a researcher developed demographic questionnaire and the NICAT. The demographic questionnaire was utilized to collect personal and professional characteristics of the participants. To increase participation by maintaining a short time frame for completing instruments, the demographic questionnaire consisted of only six
items including age, sex, years of experience, primary area of employment, and two questions asking about prior academic preparation of a baccalaureate and/or a master degree in another area.

The NICAT is a 30-item instrument employing a 5-point Likert-like rating scale (1 = Not Competent, 2 = Somewhat Competent, 3 = Competent, 4 = Very Competent, 5 = Expert). As previously noted, the instrument has three subsections: computer literacy, informatics literacy, informatics management skills. The computer literacy section is comprised of 10 questions; the informatics literacy section has 13 questions; and the informatics management skills section has 7 questions (Rahman, 2015). The total NICAT score can range from 30 to 150 and the scores can be an indication of competency level. Rahman details the scoring method as a score of 30 would be the novice level, 31 – 59 would be advanced beginner, 60 – 89 as competent, 90 – 119 as proficient, and 120 -150 as expert in regards to nursing informatics (2015).

Findings

To examine reliability of the NICAT, the Cronbach alpha for the each individual subsection and the total instrument was computed. A Cronbach alpha value of 0.70 or greater is considered acceptable for instruments that are newly developed (Grove, Gray, & Burns, 2015). The overall Cronbach alpha for the NICAT was .941. Cronbach's alpha for subsections of computer literacy, informatics literacy, informatics management skills were .89, .91, and .84.

A total NICAT score was calculated for each subject as well as scores for the subsections of computer literacy, informatics literacy, and informatics management skills. The total score ranged from 82 – 147 (M =115.92, SD = 14.42). All subjects were noted to be at the competent level or above and 37 subjects were identified at the proficient or expert level. The subsection with the highest mean score was informatics literacy (M = 50.38, SD = 7.17), followed by computer literacy (M = 37.59, SD = 6.05), and then informatics management skills M = 27.95, SD = 3.72). Two individual questions were noted to have a mean below 3.0. This included one question in the subsection of computer literacy regarding competency in using remote communication tools and one question in the informatics literacy section regarding conducting literature searches in accessible database systems. The highest mean of the individual questions was noted to be in the computer literacy section and related to being able to recognize the basic components of the computer system.

When examining correlations between demographics (years’ experience and age) and perceived competency, a statistically significant negative correlation was noted between years’ experience and score of computer literacy subscale (r = -0.59, p = .00). A statistically significant negative correlation was also noted between age and score of computer literacy subscale (r = -0.55, p = .00). Correlations were not calculated to examine difference
in scores and sex or previous academic degrees due to a small number of males and subjects reporting a prior baccalaureate and/or a master degree being included in the sample.

**Discussion**

The mean for the total scores of the sample was 115.92 indicating a level of proficiency for this specific group. In addition to the looking at the total score, it is valuable to note means of individual items in determining content for inclusion in RN to BSN programs. For example, based on findings from this study, more exposure to conducting literature searches using various databases and utilizing remote communication tools could be more useful to RN to BSN students than reviewing basic components of computer systems. A negative correlation was noted between age and computer literacy subscale and also between years of experience and score on the computer literacy subscale indicating older nurses and/or those with more experience might require additional training to increase their confidence in computer literacy. Demographics of student groups might be significant information to be considered when planning content inclusion as individual groups of RN to BSN students might benefit from more education regarding informatics, specifically items related to computer literacy.

**Limitations**

Generalizability of the findings is restricted due to recognized limitations. The limitations include a small, homogenous convenience sample. Despite the sample limitations, findings are important to add to the body of knowledge of perceived informatics competency for a specific population of nursing students. A second limitation was the use of the NICAT which is a relatively new instrument; however, statistically significant findings were identified and Cronbach's alphas were noted to be acceptable for a new instrument which supports the employment of this instrument. The NICAT was developed to be used with bedside nurses which is appropriate for RN to BSN students.

**Recommendations**

The topic of informatics is important to nursing and recommendations are evident for nursing research, education, clinical practice, and administration. Research utilizing larger, more heterogeneous samples would allow for further examination of correlations between scores and specific demographic variables, such as gender and prior academic degrees. It would also be helpful to examine perceived informatics competency of RN to BSN students upon entering and exiting a completion program. Research including observation of nurses’ in the clinical setting could possibly provide data on actual competence as opposed to perceived competence. Qualitative research exploring nurses’ beliefs regarding challenges related to informatics would also be helpful.
Those in nursing education, clinical practice, and administration should continue to assess nurses’ and students’ level of competence. Nurse educators need this valuable information for curriculum development and leaders and administrators in clinical practice could utilize the information in determining ongoing education needs.

Conclusion

The incorporation of informatics in health care is growing. Being competent in informatics is essential for nurses in a variety of settings. With an increased focus on nurses having a BSN degree, RN to BSN completion programs are important in meeting this need (Trossman, 2015). Findings from this study indicate nurses entering RN to BSN programs perceive themselves as competent in informatics, but individual students may benefit from instruction in specific informatics content such as using remote communication tools and conducting literature searches. Also, if individuals are at the competent or proficient level, they may be able to advance to the expert level with further academic education. This is an important topic for nursing education. It is essential for nurse educators to be involved in further research and curriculum review to address academic preparation required to meet the needs of nurses utilizing informatics in a variety of clinical settings.

References


