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## A Survey of Nursing Students' Perspectives on Use of Nursing Central© Information Software in Clinical Learning

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## Abstract

The information explosion and increasing popularity of electronic information storage means nursing students today must access a variety of information repositories to retrieve health and nursing information. Nurse educators are called to design innovative teaching and learning opportunities for student nurses to attain informatics competence within the current health care environment. This paper reports student nurses' evaluation of a nursing information software program, Nursing Central © software (Unbound Medicine), that was housed on a handheld personal digital assistant (PDA) and used for a six-week clinical rotation (Jamieson *et al.*, 2009). Eight (32%) of the intervention group nursing students completed the voluntarily online survey that contained open-ended and Likert questions. Study findings suggest that the PDA-based, Nursing Central © software improved access, retrieval, and quality of information to support nursing care in clinical practice. However, further study with a larger, more diverse sample and longer intervention period is required before widespread adoption of this teaching support within nursing education.

## Introduction

The information explosion, rise of electronic information, and the demands of evidence-based nursing have meant nurses need informatics competence to practice safely. More than ever, experts today concur that informatics and information literacy are need by nurses to gain nursing knowledge (Bond, 2004) and support evidence-based practice decisions

(Courey, Benson-Soros, Deemer & Zeller, 2006; Williams & Dittmer, 2009; M. Willmer, 2005a). Nurse leaders have agreed that nursing curricula should be 'infused' with informatics learning opportunities (Canadian Nurses Association, 2006) so graduate nurses can access research-relevant information to inform clinical decision-making. Undergraduate educators must prepare student nurses to function within today's information rich and technologically complex health care system (Fisher &

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Koren, 2007; McNeil, Elfrink, Bickford, Pierce, Beyea & Averill, 2003; Moule, 2003). To achieve this educational outcome requires faculty to intentionally integrate informatics learning opportunities within both classroom and clinical learning experiences (Ward & Moule, 2007; Willmer, 2005b).

**N**urses need a level of informatics competence that enables them to acquire information sources and, as one expert indicated, to retrieve and evaluate and advise patients who already access internet-based health information (Gilmour, 2007; Scott, Gilmour & Fielden, 2008). Despite this heightened need to use technology to acquire information, barriers have been reported such as slow adoption of computer technology and limited informatics skills among nurses in clinical practice (Bond, Fevyer & Pitt, 2006; Thompson & Skiba, 2008). Strong recommendations from survey studies in both American and Canadian schools of nursing suggest the need for greater integration of nursing informatics content within the nursing curriculum (Canadian Nursing Informatics Association, 2002; Skiba, 2008; Thompson & Skiba, 2008). Nurse educators need guidance on the best ways to implement

informatics learning within clinical settings so that informatics ability is promoted.

Integration of informatics technologies has been hampered by personal, knowledge, and setting barriers that limit access, acquisition, and use of information by nurses. Researchers have described nurses as ‘slow adopters’ of computer technology and as having negative computer attitudes (Timmons, 2003). The attitude that computers detract from caring (Eley et al., 2009) has also affected the implementation of technologies into the nursing clinical care environment. Structural and resource barriers have included limited access to information technology (Canadian Nurses Association, 2006; McBride, 2005) and little time for nurses in practice to search and/or acquire information sources while in clinical practice (McKnight, 2006). Researchers have reported that practicing nurses prefer interpersonal (Secco *et al.*, 2006), interactive information (McKnight, 2006; Spenceley *et al.*, 2008) sources over computer and/or print-based information sources in clinical areas.

Researchers have recently highlighted

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similar information barriers exist for student nurses in clinical learning situations such as limited computer skills (Moule, 2003) and poor access to computers in clinical settings (Ward & Moule, 2007). Issues reported for student nurses include limited access to the internet in clinical settings, frustration with poor access and location of information, and difficulty discriminating relevant from irrelevant information (Scott et al., 2008). The reports of limited informatics ability among student and practicing nurses suggest the need for a comprehensive approach that integrates informatics content throughout the entire nursing curricula.

**N**urse educators are challenged to devise new ways to integrate technology within current curricula (Fisher & Koren, 2007). University programs are beginning to require that nursing students purchase PDAs and/or electronic software rather than print textbooks (Williams & Dittmer, 2009). It makes sense to establish a firm foundation of informatics competence so that nursing students graduate and can effectively acquire information in a high tech, complex health care environment with limited resources to

support professional development in the area of informatics competence.

While nurse educators realize the importance of nursing informatics, there have been few studies to determine best strategies and informatics tools to use with nursing students.

In fact, Williams and Dittmer (2009) noted the current electronic information explosion and the push to use the best and most current evidence has sometimes resulted in premature introduction of information tools without systematic study of students and other users (Williams & Dittmer, 2009). Several nurse researchers have examined the usefulness of handheld computers in nursing practice. Bond et. al. (2006) reported that PDAs act as ‘...a portable reference guide, especially for drug information or updated medical orders at the point of care’ (p. 189) and, unlike a print textbook, PDA-based information can be automatically updated at regular intervals (Scollin, Callahan, Mehta & Garcia, 2006) to maintain currency of information. Researchers reported that nursing students and faculty were frequent users of PDA’s in a study that documented use of a PDA as an information source

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(Scollin et al., 2006; Williams & Dittmer, 2009). However, PDA's are not without limitations such as high cost, potential loss (Scollin *et al.*, 2006), small screens that make reading text difficult, and risk for loss or theft of confidential information (Bond, 2007).

**A** dearth of qualitative research limits an understanding of how student nurses experience and view use of handheld computers as information sources/tools. One qualitative study conducted focus group interviews with fourth year nursing students who used PDAs as an information tool in clinical practice (Fisher & Koren, 2007) and reported positive findings. The student nurses reported instances where the PDA was useful to gain information about drugs, side effects, and drug compatibility with intravenous solution (Fisher & Koren, 2007). Conflicting qualitative findings also supported that nursing students have both positive and negative attitudes about use of the PDA with clients. Some study students reported integration of the PDA within patient teaching and interaction while another participant thought the PDA resulted

in the patient receiving less attention (Fisher & Koren, 2007).

More research evidence is required for nurse educators to decide whether and how to integrate handheld computers within classroom and clinical learning. This study reports on a survey that evaluated the perspectives of nursing students who were provided a PDA housed with a nursing information software program for use at the point-of-care during a six-week clinical practice rotation.

## **Procedure**

This study received ethical approval from the two universities where recruitment of nursing students occurred. Verbal and written explanations of the study were provided and signed consent was obtained before starting the study. This survey phase is part of a larger, comparison study that looked at the effect of providing student nurses a handheld computer loaded with nursing information for a six-week clinical rotation (Jamieson et al., 2009). An intervention group was provided a handheld computer loaded with a nursing information software program (i.e., '[Nursing Central](#)'©)

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that contains four searchable electronic nursing textbooks (Taber's, 20<sup>th</sup> Ed. Medical Dictionary; Davis's Drug Guide; Davis's Lab & Diagnostic Tests, Diseases and Disorders) and online journal searching capability via Medline (Unbound Medicine). A non-equivalent comparison group also completed the research scales that measured student nurse stress, computer competence and use of information sources.

**D**ue to a limited number of handheld devices, the study recruited three clinical groups of nursing students over approximately a one-year period. At the end of the final clinical rotation and completion of research scales, the intervention students (N = 25) were emailed an anonymous, volunteer online evaluation survey using SurveyMonkey<sup>®</sup> electronic system (SurveyMonkey, 2009). The email contained an invitation link to the online survey which was sent three times to encourage participation and completion of surveys which were anonymously submitted to the online site (SurveyMonkey, 2009). The researchers accessed the online survey site via username and password security to collect the data for analysis.

## Evaluation Survey

The survey (Appendix A) was designed to capture nursing students' perspectives on how they used the Nursing Central<sup>®</sup> program and whether it was helpful for their learning. Both quantitative, Likert rated items (n = 6) and qualitative open-ended questions (n = 4) gathered student perspective on the advantages and disadvantages of the software program in clinical learning. The anchor for the Likert items ranged on a continuum from strongly agree (1) to strongly disagree (5). An example of a Likert item is, "The Nursing Central<sup>®</sup> program improved access to information during clinical practice situations". With the qualitative, open-ended questions, students were provided a text box to add responses to questions like, 'Please describe two examples of how you used Nursing Central<sup>®</sup> in clinical learning'

## Results

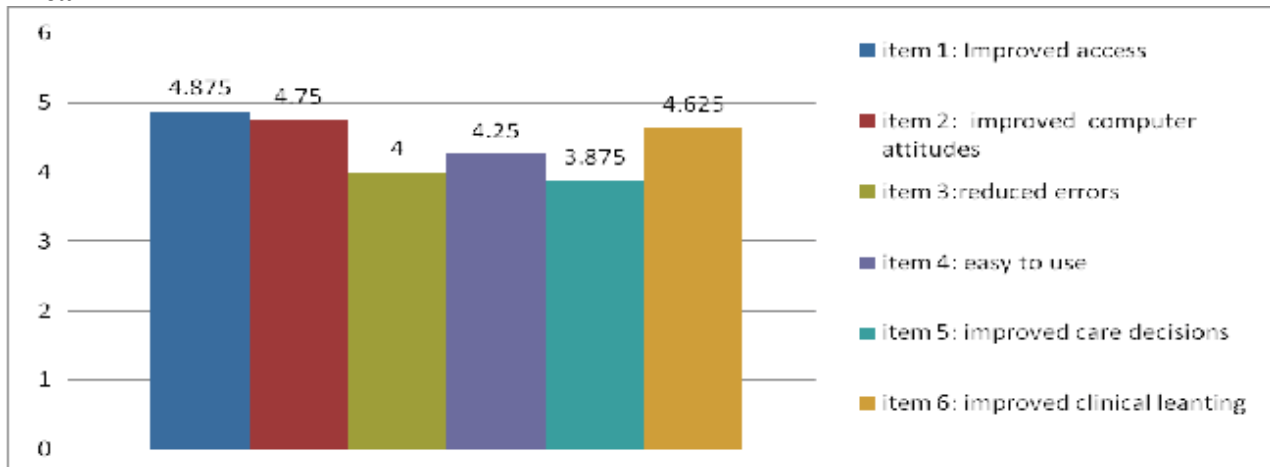
### Sample

The survey was completed by eight (32%) of the total sample of intervention nursing students who used the information

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management system during a clinical rotation.

### Mean



**Figure 1. Mean Survey Item Response**

### Means: Survey Quantitative Results (Items 1 – 6)

The high items means (high agreement) indicated that nursing students who completed the survey rated the Nursing Central© software program positively for

the item. The highest mean was scored for ‘... improved access to information during clinical practice (item 1, mean = 4.88; n = 8; See Figure 1). The student nurses generally agreed that the PDA software improved their attitudes about ‘... use of computers in

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nursing practice' (mean = 4.75). The students also indicated agreement on the potential for Nursing Central © to improve clinical learning (mean = 4.625) and its ease of use (mean = 4.25).

**T**he means for whether Nursing Central © would help reduce errors (item three, mean = 4) and/or improve decisions about nursing care (item five, mean = 3.88) were lower.

## **Perspectives: Qualitative Comments: Survey Items 7 - 10**

Qualitative comments that students provided included examples of how they used Nursing Central © (Appendix B). While the most commonly reported use of Nursing Central © (Item 7) was to access drug and patient medication information, one student described how he/she uploaded other information about patient diagnosis or the plan of care for use in clinical practice. Another student wisely suggested that more time was needed using the intervention in order to determine whether Nursing Central © improved the clinical practice experience (Item 8). This student noted being '... unsure due to the short, six-week

intervention evaluation'. Other students provided examples of how the PDA improved practice. For example, students noted that the PDA '... made looking up information easier and quicker', '... allowed for quick reference when books or other resources were unavailable', and '... enabled student nurses to look up information that they heard other nurses discussing'.

All the respondents recommended use of Nursing Central © in future clinical learning rotations (Item 9). Some of the positive features mentioned were 'convenience', 'quick access compared with textbooks saving valuable time', 'assurance that the information was right there, right at 'your fingertips', whenever needed'. One student noted that the PDA improved knowledge retention as it '... helped maintain better knowledge after preparation' for the clinical practice. Several students rated the quality and relevance of information positively with descriptors such as '... great', '... easy to read and understand'. Nursing students mentioned several ways that Nursing Central © affected their use of information in clinical practice (Item 10). Some of the descriptions referred to improved speed of

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information access, for example: , ‘... faster access to information without using textbooks’ and ‘... saving time’. One comment suggested that Nursing Central © provided a learning opportunity for clinical post conferences: ‘... promoted discussion and learning in clinical post conference’. One comment suggested that having Nursing Central © was a stress-reducer as a student experienced ‘... comfort knowing that whenever information was needed, it was available’.

## **Discussion**

**T**he findings from this study suggest that student nurses benefited from having access to a PDA loaded with an information system such as Nurse Central ©. Researchers have reported that practicing nurses desire computer technology that is easy to use and computer friendly (Eley et al., 2009). The PDA may be a means to improve practicing nurses’ computer attitudes and, especially, that computers take the nurse away from the bedside (Eley et al, 2009). The mobility, ease of use, and ready access to relevant information may make the PDA software such as Nurse Central © appealing to nurses. The survey findings that

the handheld was used to retrieve drug and medication information is consistent with previous research (Clark et al., 2009; Fisher & Koren, 2007; Lee et al., 2005; Williams & Dittmer, 2009). Fisher & Koren reported that student nurses described how the PDA informed critical thinking and decisions for nursing care including checking drug and intravenous solution compatibility and potential side effects to teach clients (Fisher & Koren, 2007). However, in the current survey students reported quick access and availability of information in the Nursing Central © software did not necessarily improve critical thinking and/or decision-making.

While the small sample size is a study limitation, study findings suggest that student nurses found the PDA-based Nursing Central © information management system to be a valuable tool in clinical practice. While findings suggested that having the information available at hand lowered stress, further research with a larger and more diverse sample of nursing students is required to validate the study findings. The reality of progressive digitalization of health and nursing information requires that

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education and practice settings plan effective strategies to help nurses acquire informatics competence. Nurse educators can plan informatics educational opportunities so that graduating nurses enter practice prepared to work within a constantly changing health care technology environment (McNeil *et al.*,

2003; Moule, 2003) assured with a level of informatics competence that enables decision-making informed with valid health and nursing knowledge. The Nursing Central © software may be one useful tool to assist with the development of this competence.

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### Appendix A: Evaluation Survey

1. The nursing central program improved access to information during clinical practice situations.

Strongly  
Agree

Strongly  
Disagree

1	2	3	4	5
---	---	---	---	---

2. After using the nursing central program I have more positive attitudes about computers in nursing practice.

Strongly  
Agree

Strongly  
Disagree

1	2	3	4	5
---	---	---	---	---



3. The nursing central program helps reduce errors.

Strongly  
Agree

Strongly  
Disagree

1	2	3	4	5
---	---	---	---	---

4. The nursing central program was easy to use.

Strongly  
Agree

Strongly  
Disagree

1	2	3	4	5
---	---	---	---	---

5. The nursing central can help make better decisions about nursing care.

Strongly  
Agree

Strongly  
Disagree

1	2	3	4	5
---	---	---	---	---

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6. The nursing central program can improve clinical learning.

Strongly  
Agree

Strongly  
Disagree

1	2	3	4	5
---	---	---	---	---

7. Please describe two examples of how the nursing central program was used in clinical practice

[Text Box]

8. Please describe whether the nursing central program improved clinical practice experience.

[Text Box]

9. Describe whether you would recommend use of the nursing central program in future clinical practice rotations.

[Text Box]

10. Please describe whether the nursing central program affected use of information for clinical practice.

[Text Box]

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## Appendix B: Qualitative Survey Data

### Item 7. Please describe two examples of how the nursing central program was used in clinical practice

- I was able to look up drugs and illnesses on the floor in an instant.
- I also uploaded my paperwork to the palm so I could refer to it easily.
- When I entered a patient's dx a care plan was available to aid with patient care.
- It was also great to look up drugs while on a unit.
- When I entered a patient's dx a care plan was available to aid with patient care.
- It was also great to look up drugs while on a unit.
- Used to research medications, including their use safe doses etc.

### Item 8: Please describe whether the nursing central program improved clinical practice experience.

- It is difficult to say whether the nursing central program improved clinical practice due to the short period of time with the nursing central program and little experience with clinical practice.
- It made looking up unknown information easier and quicker.
- It improved clinical experience because it allowed for quick reference for questions when books or other resources were unavailable. They saved time and allowed for quick access so it was not necessary to try and look for the information elsewhere on the unit.
- It improved clinical practice experience for me because of the easy access to information. I could rely on it a lot of the times for information I needed rather than asking the professor or

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taking the time to look up a text. When reading charts or hearing other nurses talk I would read and hear term I did not know or was not sure of and I was able to quickly look them up in Nursing Central ©.

## **Item 9: Describe whether you would recommend use of the nursing central program in future clinical practice rotations.**

- Yes, because of it's convenience.
- Yes I would recommend it for other clinical groups
- I would recommend the use of this program it would also be a great reference tool if it was possible for the hospital's to input their policy and procedures on palms
- I would recommend it in future clinical practice because of the quick access to information. Especially
- It did improve clinical practice as we were able to research information quickly and easily rather than searching through large texts leaving valuable time
- It was reassuring to know that information was available whenever I needed it. It was easy to use and gave great information and suggestions about patient care.
- I believe it improved our experience by allowing us to have access to drugs, practices, procedures and illnesses at our fingertips
- For looking up medications the information is easy to read and understand. Even after preparing for clinical at times when you get there, you may be unsure of some details about meds or diseases /disorders. Having the Nursing Central is helpful at those times for accessing the information and maintaining a good knowledge base
- Yes, I would recommend the program in future rotations
- I would absolutely recommend nursing central in future rotations.

**CITATION:** Secco, M.L., Jamieson, B., Profit, S., Bailey, J., Brennick, D., Whitty-Rodgers, J. & MacIssac, A. (2010). A Survey of Nursing Students' Perspectives on Use of Nursing Central© Information Software in Clinical Learning. Canadian Journal of Nursing Informatics (CJNI), 5(3). <http://cnia.ca/journal/Summer2010/Secco.pdf>

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- I would definitely recommend further use of this program in the clinical practice.

## **Item 10. Please describe whether the nursing central program affected use of information for clinical practice.**

- Made looking up skills, information and medications a lot more quicker when I need the information right away. I didn't have to search a million books because it was all on my pilot.
- It helped in clinical practice because it allowed for further discussion and understanding during post conference. It allowed others to learn and educate each other regarding certain issues that they have looked up and learned about.
- I looked up more things and learned more because of the easy access to information. I enjoy using technology, find it easier to use and less time consuming than looking through a text book. I bought my own palm and Nursing Central for third year after doing the trial run during intercession. I found it very useful.
- It helped to save time during research nights. It was comforting to know that whenever I needed to find information it was available. I could save things on the palm and easily access the information.

**EDITOR: Agnese Bianchi**

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