Nursing students and internet health information

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Summary   This study investigates use of the internet by nursing students to access health information and their evaluation practices in relation to this information. The research method was a retrospective descriptive postal survey. A questionnaire was sent to all undergraduate students enrolled in a Bachelor of Nursing programme at a New Zealand university in 2005. The response rate was 50% or 174 responses. Findings from the study included marked variations in respondents ability to successfully search for and evaluate relevant internet health and nursing information. Few respondents assessed patients use of the internet to gather health information or assisted patients with evaluation. As searching, evaluating and sharing online information is a core element of nursing practice, formal education to develop competency in the ability of all nursing students to retrieve and assess internet health information is essential. The integration of these skills into nursing practice is a vital step in developing new approaches to working with knowledgeable consumers of internet health information.
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Introduction

Internet access is steadily increasing overall even though there are demographic differences in internet use within the population in terms of age, household income and educational level (Statistics New Zealand, 2004). The internet is now an important source of health information for the general public (Madden and Lee, 2003; Scott et al., 2005). As internet health information becomes increasingly accessible nurses along with other health professionals are expected to engage in information sharing with the public and to assist them with finding, understanding and evaluating health information (Brooks, 2001; Eberhart-Phillips et al., 2000; Fielden et al., 2003). Various research findings suggest however that the nursing profession has been

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slow to incorporate computer and information literacy into nursing practice (EstaBrooks et al., 2003; Janes et al., 2004) and to integrate it into nursing education (Bond, 2004; Farrell et al., 2007; McNeil et al., 2006).

This paper presents the results of a study of student nurses use of the internet for health information and their evaluation practices in relation to this information.

Background

There is discussion in health professional literature about quality issues with online health information and a recognition that health professionals should be working alongside patients to help with finding up-to-date, relevant, valid and reliable health information (Eberhart-Phillips et al., 2000; Anselmo et al., 2004). As an example, quality problems are identified by Schmidt and Ernst (2003, 2005) who report misleading information and/or lack of support for conventional treatments in cancer and diabetes sites. While there is evidence that doctors are increasingly recognizing the need to utilize internet health information in their practice, there is little evidence in the nursing literature of nurses using internet information with patients to enhance practice outcomes (Estabrooks et al., 2003; Fielden et al., 2003; Janes et al., 2004). In New Zealand a survey of 175 rural general practices found that 53% of general practitioners used the internet widely compared to 12% of the nurses and 16% of the pharmacists (Janes et al., 2004). A survey of Canadian nurses found that although internet use increased over a two year period (1996—1998) from 8% to 29%, respectively, the doctors rate of use over the same period increased to 42%, with the authors suggesting that nurses saw the internet as a barrier to patient contact (Estabrooks et al., 2003).

Nurses use of the internet in practice has been found to be influenced by their information and computer literacy skill level (Gosling et al., 2004; Moody et al., 2004). Gosling et al. (2004) found in an Australian survey (3218 nurses in 65 hospitals) that internet users who were computer trained could successfully find information and saw it as a justifiable nursing activity. Moody et al. (2004) found in an American descriptive study (100 nursing personnel in 1 hospital) that nurses who already had expertise in internet literacy moved into using electronic health records much more quickly and confidently than other nurses.

In nursing educational settings there is some evidence that the utilisation of e-learning strategies is taking place and a recognition of the need to nur-

ture and develop internet literacy skills (Wishart and Ward, 2001; Bond, 2004; McNeil et al., 2006; Farrell et al., 2007), particularly through enabling availability and frequency of access (Bond, 2004; McNeil et al., 2006; Farrell et al., 2007) is emerging. Shorten et al. (2001) reported that integrating learning activities designed to develop information search, retrieval and evaluation skills with undergraduates led to a statistically significant difference in skill. Bond (2004) however, in a survey of 317 pre-registration students, found that although there was a high degree of computer ownership (84%) most students were not confident using the internet and reported only basic skills.

The literature shows that generally, nursing continues to be slow to integrate computer and information literacy into practice, suggesting that nursing education needs to work with clinicians without further delay to prepare graduates who are fit for practice in the 21st century (Bond, 2007).

Research design

Methods

The aims of this study were to:

  i. explore nursing students knowledge about internet health resources,
 ii. identify evaluation practices in relation to internet health information,
iii. examine the use of internet health information during clinical placements.

A retrospective descriptive survey was used with mail-out questionnaires to collect both quantitative and qualitative data for this study from undergraduate nursing students enrolled in a Bachelor of Nursing programme in 2005 in a New Zealand university. A survey of registered nurses enrolled in postgraduate courses was also carried out simultaneously and these results are reported in Gilmour et al. (2008).

Sample

A questionnaire was mailed out at the end of the 2005 academic year to a convenience sample of all 356 students enrolled in the Bachelor of Nursing undergraduate programme. The majority (274 students) were undergraduates who would be eligible to apply for registration as a nurse in New Zealand on successful completion of their programme. The remaining students (77) were registered nurses.

The university Human Ethics Committee approved the study. Students were posted an introductory letter outlining the background and purpose of the survey, addressing issues of confidentiality, anonymity and consent, along with a questionnaire. Each student was invited to participate by returning the completed, labelled and numbered questionnaire in a stamped, addressed envelope. There were five non-contactable students. A reminder letter was sent approximately one month after the original mail out. The final response rate for the whole group of undergraduate students was 50% or 174 respondents. The registered nurse response rate was 31% or 24 respondents and 54% or 150 respondents for the pre-registration students.

The questionnaire

The literature search located two key surveys on the use of the internet by the general population to source health data. The first of these was in the United States of America (Princeton Survey Research Associates, 2001); the second was in New Zealand (Scott et al., 2005). Both were telephone surveys. Within the nursing literature no surveys were found which researched nursing students use of the internet to complement clinical practice. As the Pew (Princeton Survey Research Associates, 2001) survey had identified key issues in the use of the internet for health information retrieval with a questionnaire which had been tested for reliability and validity, relevant questions were modified for inclusion in this survey following the permissions/reprint policies provided online.

The items developed for the questionnaire to be used in this study consisted of a mix of closed questions requiring univariate responses indicated by either a single or a range of multiple responses, and open-ended questions offering respondents the opportunity to comment on a particular topic. The questions were divided into four sections:

- demographic details,
- knowledge of internet resources including respondents' opinions about patient use and benefits, use of online health information and favourite websites,
- respondents' evaluation of online health information and difficulties locating this information,
- an examination of the use of health information in nursing practice including whether they assessed patients use of online health information and any assistance given to evaluate this information.

Responses to questions focusing on frequency of internet use and ability to find and evaluate relevant internet material used multiple nominal categories. Dichotomous yes or no responses were used for the questions, ''Do you check whether or not the clients you meet during your clinical placements use the Internet to access health information?'' (and if the respondent answered yes), ''Do you assist your clients to evaluate the quality of Internet health information?''. Open-ended questions included topics such as the respondents' reasons for favourite website choices, the ease and difficulties in finding health information online and use of online facilities during time in practice placements.

The questionnaire was piloted with a group of staff at the university who were registered nurses to check the language and vocabulary of the questions for accessibility and relevance of the questions. Minor changes were made as a result of the feedback.

Data analysis

The descriptive quantitative data collected in response to the closed questions was summarized using Excel. In the findings and discussion where more than one response to closed questions was available to respondents the numbers of responses have been given alongside the percentages of responses to distinguish these questions from those requiring a single response.

Responses to the open-ended questions were initially transcribed verbatim. These texts were then coded and categorised to enable a numerical analysis of the comments (Lupton, 1999). A qualitative analysis was then carried out using a thematic approach defined by Roberts and Taylor (2002, p. 426) as a 'method for identifying themes, essences of patterns within a text'. The respondents answers were compared, extracts were grouped and placed into themes. Responses which validate the themes are included as illustrations in the findings.

Results

Demographics of the sample

The demographic data (age, gender and ethnicity) for the sample group is summarised in Table 1. Respondents were also asked about their access to a home computer, income and how they learned to use the internet. Many respondents (55%, $n = 94$) were largely self-taught in their use of internet searching tools. The median household income

level of the respondents was $30,000 and most (90%, *n* = 156) had access to a home computer.

Internet health information and patients

Most respondents (57%, *n* = 100) believed that the public often or sometimes used the internet to gather health information. Few respondents (11%, *n* = 20) carried through on this belief and checked with patients themselves about their use of the internet to find health information and even fewer (3%, *n* = 5) assisted patients to evaluate the health information they had accessed. However, as one respondent said:

> The advent of the internet means that patients are now becoming more equipped with knowledge surrounding their health and nurses should feel confident and comfortable discussing this knowledge with patients. (Respondent 261)

Respondents perceived that patients gained many benefits from accessing health information online such as becoming more knowledgeable about their health (37%), gaining helpful advice from patient support sites and consumer groups (24%), accessing second opinions (13%) and support with health needs (13%) (*n* = 385, more than one answer was allowed). Some respondents used the internet to look for information on behalf of patients (9%, *n* = 59 of 673 responses, more than one answer was offered from 7 options). When accessed by respondents during their clinical placements on behalf of patients this information was likely to be about new medication (18%, *n* = 42 of 233 responses) or validating patient's understanding about their condition (18%, *n* = 42 of 233 responses).

Internet searching and evaluation skills

There were wide differences between respondents in their ability to both find and evaluate internet health information. As well, time spent online varied, as did the issues identified as barriers to accessing online facilities at clinical agencies during placement.

A majority of respondents (61%, *n* = 105) reported finding most or all of the information they were seeking during their most recent online search, with most of this group (67%, *n* = 70) going online during clinical placement. A reason given by many respondents for not using accessed information included navigation difficulties (Fig. 1). Several themes emerged in the qualitative analysis related to searching skills such as the time needed to develop successful skills and the need to know useful sites and key words (Table 3). The following comment illustrates the experiences of some respondents:

> I got very confused with finding what I needed. I got lost or was unable to access it so I ended up giving up. Usually need help (librarian or other person). (Respondent 145)

Favourite websites were CINAHL, Blackwell-Synergy and EBSCO and the favourite search engine was Google. Useful websites were found mainly

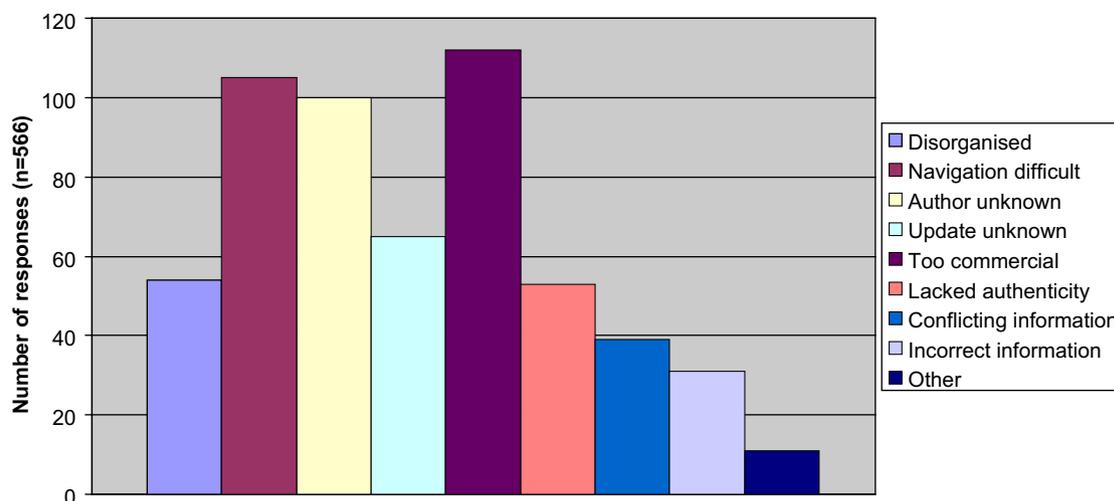| Demographics		*n*	%
Total questionnaires		351	
	Not contactable	5	
	Eligible	347	
	Response rate	174	50
Full time students		144	83.1
Part time		30	17
Ethnicity	NZ European	125	67.9
	Maori	8	4.4
	Chinese	17	9.2
	Pacific Islander	6	3.3
	Indian	4	2.2
	Other	24	13
Gender	Female	165	94.8
	Male	9	5.2
Age	Mean	28.32 years	
	Median	23 years	
	Age range	17−61 years	

Table 1 Demographics of sample

Figure 1 Reasons accessed data not used.

through internet searches (38%, $n = 83$) and less often through a nursing colleague (30%, $n = 66$) or a librarian (18%, $n = 41$).

Believing most or all of the internet health information found was reported by forty-six per cent of the respondents while many others sometimes or hardly ever checked the author, or date of posting (Table 2). Two of the main reasons given for not using information which had been accessed were concerns about commercialism or uncertainty about the author (Fig. 1). Issues about reliability and relevance also emerged in the qualitative data as a theme in relation to finding internet information (Table 3), with a respondent saying:

> One aspect that slightly deters me from using the internet is the inability to validate that the website is official, accurate and reliable with its information. (Respondent 101).

Time per online visit increased when respondents went online during their clinical placement experience. Many respondents (43%, $n = 74$) spent less than 30 min per search with fewer respondents (34%, $n = 58$) spending between 30 min and two hours. Though when respondents went online during clinical placement time (71%, $n = 101$), more (75%, $n = 78$) were likely to spend between 30 min and two hours per online visit.

During clinical placement respondents experienced barriers to accessing online facilities at the clinical agency including issues about negotiation, preceptor support and differing perceptions about the 'role' of both the student and the computer (Table 4). As one respondent said:

> I used the internet during my clinical placement but at home, not while I was at the placement venue as I would have felt like a 'load' student not participating appropriately. Anyway the computer was not available. (Respondent 312).

Generally online resources were seen to offer current, easily accessible and relevant information, but frustrations were also expressed about locating relevant data, the time consuming nature of searching and uncertainty about how to search (Table 5).

Discussion

The major limitation of this study is that the findings cannot be generalised to other populations as a non-probability sample may not be representative of the target population of students in a Bachelor of Nursing programme. Another key issue in relation to the sample is that there is an inherent

Table 2	Beliefs, author and date of posting							
Believe internet health information	n	%	Check source of information	n	%	Check date of posting	n	%
All or almost all	11	6	Always	60	35	Always	43	25
Most	69	40	Mostly	51	30	Mostly	50	29
Only some	86	50	Sometimes	35	20	Sometimes	41	24
Do not know	7	4	Hardly ever	27	16	Hardly ever	39	23

Table 3 Finding internet health information

Themes	Comments	Number of comments
Awareness of specific sites	Easy as long as you know where to go	38
	Hard to start off with when I did not understand the sites	
	Easy once you know which websites to access	
Reliability and relevance of information	Variety of sources but not all trustworthy	27
	Difficult to determine believability, accuracy, whether unbiased	
	Easy to find, hard to find reliable information	
Depends on nature of topic	Often can not find a reliable nursing site	18
	Difficult if complex or specific topic	
	Relatively new ideas hard to find	
Importance of specific words, spelling, topic	Check information found against other resources e.g. journals, books	15
	Very specific research can be difficult	
	If do not know exactly what looking for difficult	
Time requirements	Daunting at first	14
	Easier when shown	
	Searching skill takes time to acquire	
	Sometimes takes longer	
Amount of information	Still get lost	8
	So much of it, so hard to decide what is most relevant	
	Bombarded by amount feel frustrated	

Table 4 Accessing the internet during clinical placement

Themes	Comments	Number of comments
Reasons for no access at placement agency	No opportunity available	32
	Inappropriate, chose not to use	
	Limited resources at agency	
	Limited time (i.e. workload) at agency	
	Staff reluctance at agency	
	RN's do not know how to use	
Support for access at placement agency	Encouraged to use online facilities	22
	Easier than other resources	
	Helpful with nursing care	
	Learned new sites	
	Improved own skills and knowledge	
Internet access should be available	Preceptors should encourage	5
	Negotiation may be possible	

potential bias in that respondents may be more likely to be successful and competent internet users than respondents who did not reply. There is also a lack of discrimination between respondents who were able to access the internet at their clinical placement agency and the respondents who accessed the internet elsewhere during the time they were on clinical placement. Research by Ward and Moule (2007) has found that staff can deny computer access to students. A further limitation is that we did not ask whether the respondents were in the first, second or third and final year of their programme. Students skills in accessing and

evaluating online information should develop as they progress through a degree programme, a useful topic for further research.

Given the public's increasing use of the internet to find health information (Madden and Lee, 2003; Scott et al., 2005) one of the most significant findings in this study is that few respondents checked patients use of the internet to increase health knowledge, and that even fewer assisted patients to evaluate the internet information they had accessed. This was despite many respondents being aware that the public access the internet to search for health information. Similar findings were apparent in our study of registered

nurses enrolled in postgraduate courses where the majority of respondents also did not routinely assess patients use and evaluation of online health information (Gilmour et al., 2008). In the registered nurse study there was an association between nurses who were frequent users of online resources and the assessment of patient use of internet resources. These findings may reflect the trends reported in the literature that nurses in particular do not seem to acknowledge the importance of internet health information to the public and the influence it potentially has on the way nursing is practiced (Estabrooks et al., 2003; Janes et al., 2004).

A further key point to emerge from this study is that many respondents did not access the internet during their clinical practice experience time. The reasons identified may reflect nurses ambivalent attitudes to integrating computer literacy into nursing practice as reported in the literature (Estabrooks et al., 2003; Janes et al., 2004; McNeil et al., 2006). A range of activities are identified in this study supporting the value of student internet access in clinical settings. These include some taking the opportunity to respond to patients questions about their health or their medications, and some

locating policy and protocols both of which are likely to benefit patients.

Respondents perceptions of the key benefits to be gained by the public did reflect some of the known concerns of the public when seeking information online including information about their health condition and prescription medications (Anselmo et al., 2004; Scott et al., 2005). Responses did not however suggest an awareness of the primary health focus of much of the public use of the internet in seeking information on, for example, nutrition (Scott et al., 2005).

The findings also highlight several issues in relation to variations in information literacy between respondents. Some students were frustrated with struggling to learn how to access and locate data and discriminate between relevant and irrelevant information, frustrations which have also been identified by Bond (2004), as well as difficulties in ensuring the trustworthiness, credibility and reliability of internet information. The variability between students in their ability to utilize the internet suggests that many students require careful support to acquire the necessary information technology skills, including information literacy.

Table 5 Reasons for using or not using websites

Themes	Comments	Number of comments
Positive view of using online resources	It is very helpful to find new research Saves time keeping up to date Has increased my knowledge incredibly about certain topics studies	38
Value of instruction/guidance	Would definitely have found more emphasis helpful earlier Websites geared to web literate people can be very confusing More instruction on which sites not to look at	14
University's resources	Access to internet has been fantastic Even after completing the degree one would like to be able to access sites to keep up-to-date Provision of specific nursing websites is really helpful	12
Comparisons with non online resources	I have gained information from staff in placement or books Online information saved me time No chance of information 'being on loan'	14
Issues with trustworthiness of online resources	Tool must be used wisely and information from web used with a grain of salt I never base my assignments purely on it as can be unreliable	12
Desire to increase online skills	I think I need better understanding of how to search Am a novice so the more help and guidance I can get the happier I will be	6
Up-to-date nature of online resources	Online information is always updated, knowledge current Online information is updated knowledge for assisting my study and practice	6

Conclusions

While it is accepted that nursing education is increasingly integrating computer and information literacy into nursing curricula, this study is useful in illustrating the wide variation in information technology skills within this group of undergraduate students and in their application of these skills into their nursing practice experiences. The findings highlight the need to find ways to ensure that all students achieve competence in information literacy and are able to integrate these skills into their nursing partnerships with individuals, families and communities. Information technology skills should be formally structured into programmes as a way to ensure all nursing graduates are well-prepared for professional practice in a future dominated by information technology. All graduates should be competent in information retrieval skills and have critical information literacy skills which, perhaps most importantly for patients, should be explicitly linked to their clinical experiences. Competence in assessing patient knowledge, patient access to information and support with patients evaluation practices is now a core aspect of contemporary nursing practice.

Academic strategies to develop information literacy, numeracy and competency need to be paralleled in the clinical context to guide student learning. Preceptors need to be competent internet users and to model practice which demonstrates reciprocal information sharing with patients. Without congruent guidance in both the academic and practice contexts nursing students will continue to struggle to learn how to develop the professional partnerships required to achieve optimal health outcomes. Focused approaches are required, ensuring students acquire information technology skills and develop the critical information literacy skills needed for learning to nurse in an electronic environment (Bond, 2004; Farrell et al., 2007).

The rapid growth of the internet as a source of health information is challenging the nursing profession to respond urgently. The need for nurses to work in partnership with the public by offering support in effectively searching for health and nursing information and in participating in the critical evaluation of this information requires nursing education to ensure all graduates are immediately capable of meeting these challenges.

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