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Use of evidence by nursing students: An interdisciplinary study

Pat Gannon-Leary[a,*], Graham Walton[b,1], Raffik Cader[c,2], Julie Derbyshire[c], Ann Smith[d]

[a]*Northumbria University, Academic Registry, Ellison Building, Newcastle upon Tyne NE1 8ST, UK*
[b]*University Library Loughborough, University of Loughborough LE11 3TU, UK*
[c]*School of Health Community & Education Studies Northumbria University, Coach Lane Campus, Newcastle upon Tyne NE 7 7XA, UK*
[d]*The Open University in the North, Eldon House, Regent Centre, Newcastle on Tyne, NE3 3PW, UK*

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Abstract

This project, conducted by an interdisciplinary team comprising nursing academics and information professionals, focused on nursing students' access to, and use of, learning resources with respect to an evidence-based practice assignment. From the information professionals' perspective, there was interest in examining the level of use of information, the use of print versus electronic media, students' application of critical and evaluative skills to information sources, and how access to learning resources and libraries is still important. The nursing academics were concerned with exploring the students' perceptions of evidence and what was perceived by them to be "quality evidence." References used by the students were tabulated and analyzed, and subsequent to this, focus groups were conducted to ascertain the degree of ease with which the students found information and the types of support afforded to them in tracking down information. The results highlight the continuing

* Corresponding author.
E-mail addresses: pat.gannon-leary@unn.ac.uk (P. Gannon-Leary), graham.walton@lboro.ac.uk (G. Walton), raffik.cader@unn.ac.uk (R. Cader), julie.derbyshire@unn.ac.uk (J. Derbyshire), a.g.smith@open.ac.uk (A. Smith).
[1] Tel.: +44 1509 222355.
[2] Tel.: +44 1912156367.

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importance of access to libraries and learning resources and of an equitable level of staff support. They also raise questions that provide a springboard for future research.

1. Introduction

This project was conducted by an interdisciplinary team comprising information professionals and nursing academics, some members of which had previously worked together on an enquiry-based learning (EBL) project. The success of this collaboration led to consideration of further joint projects. Like EBL, evidence-based practice (EBP) bridges the gap between training and practice, equipping health care professionals to deal with the demands of a changing society.

The concept of EBP emerged in the health sector in the 1990s and evidence-based librarianship has recently developed as a concept. All members of the team therefore had an interest in the nature of evidence. From the information professionals' viewpoint, this interest manifested itself in impact studies on the value of libraries and evidence on students' information skills. From the nursing academics' viewpoint, the interest was in the fact that EBP necessitates health care practitioners being able to critically appraise research and evidence of its validity and clinical application (Strauss & Sackett, 1998).

One way of helping nursing students learn to exploit all the ways of knowing in order to provide a basis for the best EBP in nursing (Hewitt-Taylor, 2002) is the inclusion of an assignment in the curriculum in which an analysis of the health needs of a particular client group is undertaken. This assignment afforded the ideal opportunity for another collaborative project for the interdisciplinary team.

In this collaboration, qualitative and quantitative methods were employed. The former involved focus groups with students after the completion of the assignment. This methodology had been used during the team's previous collaborative venture. The latter involved citation analysis of the sources used by the students in completing the assignment, which was a new research method as far as the team members were concerned, but one that was appropriate for the project.

The health needs analysis assignment exemplified a problem-solving process, two key components of which are information seeking and data utilization. The data derived from the two research methodologies informed both these components and gave insight to all members of the interdisciplinary team. This article focuses on the insight gained by the information professionals in this collaborative venture.

2. Literature review

The concept of evidence-based practice (EBP) emerged in the health sector in the 1990s. Sackett (1996) explained: "EBP is the conscientious, explicit and judicious use of current best evidence in making decisions .... (it) means integrating individual expertise with the best

available evidence from systematic research." Currently, library and information professionals embrace the concept, and Eldredge (2001) proposes that evidence-based librarianship (EBL) seeks "to improve library practice by utilizing the best available evidence in conjunction with a pragmatic perspective developed from working experience in librarianship." The concept of EBL has now become noteworthy enough to be the subject of a book edited by Booth and Brice (2004).

The need for evidence is best illustrated by the number of library impact studies in various sectors. These include studies in the health information services (Cullen, 2004; O'Connor, 2002; Weightman & Williamson, 2005), higher education (Crawford, Fiander, & Payne, 2004; Dalton & Thebridge, 2003), the public library sector (Eve & Brophy, 2001; Morris, Sumsion, & Hawkins, 2002; Train & Elkin, 2001), and the college and school library sectors (Streatfield & Markless, 2001). There is a shared perspective that evidence is needed for funders and users of libraries that show the value and quality of their services (Johnson, 2004).

Evidence has also been gathered with respect to health students' information seeking skills (Anderson, Brook, & Pattern, 2005) and how these can be facilitated. Library and information professionals have a role in developing EBP skills in students, which will be carried forward when students become practitioners. Information literacy underpins the EBP process (Blenkinsopp, 2004). "Information literacy" is defined by the leading U.K. professional body for information specialists, the Chartered Institute of Library and Information Professionals (CILIP) Information Literacy Group, as "knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner" (Armstrong, 2005, paragraph 10). Ensuring students develop such skills is, therefore, an essential requirement within the education of student nurses if, following registration, they are to influence the quality of care and be able to actively engage in, and influence, key decisions concerning resource allocation. The importance of ensuring the client is at the center of service developments is also recognized (Walton, 2004a).

EBP is a significant area of interest for nursing academic members of the interdisciplinary team. EBP bridges the gap between training and practice, equipping health care professionals to deal with the demands of a changing society. The need for quality health care services based on effective interventions, and increasing demands on health care services and the constraints of resources available to meet them, have all provided impetus towards the provision of EBP (Palfrey, Thomas, & Phillips, 2004). For health care practitioners, this includes not only critical appraisal of research and evidence of its validity and its clinical application (Strauss & Sackett, 1998), but also consideration of the preferences and values of patients and stakeholders (Department of Health, 1999; Greenhalgh, 1996; Walton, 2004b). This overall approach is emphasized by Rycroft-Malone et al. (2002) who stress the importance of a variety of sources of information, leading to the view that, to be effective, nurses must exploit all the ways of knowing if they are to provide a basis for the best evidence-based practice in nursing (Hewitt-Taylor, 2002). However, difficulties associated with the implementation of evidence-based care have been highlighted (e.g., how to influence health professionals, how to coordinate disseminations and implementation interventions, how to effect behavioral change, and how to implement skills training), leading to the

recognition of the importance of raising research awareness and creating practice cultures in which there are high motivation and incentives for change (Cochrane Review Group, 1999).

One way of helping preregistration nursing students to have an understanding of the importance and relevance of evidence-based practice, and gain key knowledge and skills to implement it, is the inclusion of an assignment in which an analysis of the health needs of a particular client group is undertaken. Health needs analysis is viewed as the important first stage in any health promotion cycle (Clegg & Doherty, 2001) and an integral component of every health care professional's role, essential to the delivery of modern health care (Department of Health, 1999). The challenge for health professionals is therefore its incorporation into everyday practice to ensure the delivery of cost effective, high-quality, evidence-based practice.

By undertaking an assignment that simulates this activity, students are engaged in evaluating evidence, including critical reading of research articles and consideration of other important sources of information, such as patients' views and preferences. Students are asked to identify a particular patient/client group bound together by a common problem or diagnosis within a specific population area, such as a Primary Health Care Trust, and collect data to assess their health needs (using a framework such as Bradshaw's (1972) typology of normative, experienced, expressed, and comparative needs). Students are then asked to discuss the implications of the results for practice. Students need to be able to access and interpret a range of information including demographic, epidemiological, socioeconomic data, local and national health targets, risk factors, hospital admissions data, local, regional and national surveys, and patient/client satisfaction surveys.

The aim is to equip students with the skills of critical thinking, analysis, and problem identification and solving so that they can influence the quality of care and actively engage in, and influence, key decisions concerning resource allocation following registration. Utley-Smith (2004) contends that only through developing such skills will the profession challenge issues related to current practice and exert an influence on health care provision in the future. However, in the past, students undertaking a health needs analysis assignment have reported difficulties in accessing some of the information. This has emphasized the importance of coherent and relevant guidance and support for students by the means of close collaboration of academic and healthcare library and information staff.

Two issues of particular interest to the information professionals involved in the project were the determination of the impact of the library in learning and the determination of the range and level of students' information literacy skills.

To enable a better understanding of these issues, the project was designed to explore the nature and range of the source materials used by nursing students to undertake a health needs analysis assignment. In doing this, it aimed to: (1) identify sources used by student nurses to provide relevant, supportive information to undertake a health needs analysis of a particular client group, and (2) determine the ease or difficulty in accessing source materials.

In identifying the sources used by the students, the information professionals on the team were interested in examining the move to electronic information and the role of books and other print media in meeting the students' needs.

In determining the issues or dead ends that students find particularly difficult or frustrating in accessing source materials, the information professionals hoped to gain insight into the nature of support likely to be most effective in enabling students to access those resources necessary to conduct a health needs analysis. They wished to examine the information seeking behavior of nursing students tasked with a health needs analysis assignment to see how far they explored a wide range of resources, and to begin to assess that the impact of undertaking a health needs analysis and the experience of EBP might have on the library/learning experience.

Information seeking characteristics of nursing students explored include: what they say they use to find information; how they cite resources used; any barriers that may prevent them from finding the information they require; the exemplification of critical and evaluative skills in selection of information resources; and exhibition of any training needs.

3. Methodology

The methodology used was a mixture of quantitative and qualitative approaches. Students gave permission for their health needs analysis assignment to contribute quantitatively to the research. Copies of their lists of references were collected from 40 students who had undertaken the BSc (Hons) Nursing Studies program (adult branch) health needs analysis assignment. The students were chosen on a pragmatic basis since they comprised the two groups undertaking the degree program in the adult branch; they were taught by two of the researchers collaborating on this small project and they were available at the time and had just completed a relevant assignment. The internal university ethical committee processes were used to gain the relevant approval. All students completed a form giving their informed consent to the work. They were assured anonymity of the lists and that the reference lists would not impact on the grade awarded for the assignments.

Citation analysis was employed in this study, a procedure similarly used by the study identifying the impact of the library undertaken by SCONUL and LIRG (Roberts, 2003). This procedure has also been used by Davis (2003) and Kraus and Fisher (2000). The sources cited in the students' reference lists were tabulated using proforma identifying resources. The proforma was developed and then piloted prior to the project with 10 assignments from other nursing students. Changes resulting from the pilot included amending the time period covered by the proforma. The original proforma was designed by the team after a "thought showering" session discussing potential sources of information, and as the result of a preliminary analysis of previous assignments, to reveal commonly cited types of sources. The distribution of references between different sources for all the student assignments was measured using quantitative analysis.

Citation analysis has been used for some time now as an analytical tool for examining reference citations in bibliometric studies, as a collection development tool in libraries, and as a means of assessing the quality of undergraduates' information seeking skills as an indicator of the efficacy of (or the need for) training.

Brophy, Fisher, and Booth (2003) give examples of the use of citation analysis in all these areas, making reference to the work of Lindholm-Romantschuk and Warner (1996) when examining the role of monographs versus journals in scholarly communication; to the work of Ching and Chennupati (2002) in connection with collection management and the justification of selection or deselection of material; and to the work of Buttlar (1999), which used citations from doctoral dissertations to identify factors including author gender, material type, and country of origin.

Citation analysis has the advantage of being a noninvasive analytical tool capable of quantifying skills. As Sylvia (1998) comments, it is an appropriate methodology when attempting to determine the type of resources used most frequently, as it is unobtrusive, citations are easy to obtain, and are not altered by examination. Buttlar (1999) propounds the methodology since citations represent uncontaminated data, analysis of which does not require the participation–or expression of opinion–of respondents. Hovde (2000) suggests that citation analysis of student papers provides a flexible, time-efficient assessment means of documenting student library use.

Tunon and Brydges (2005) highlight the particular appeal of this methodology since citations can be treated as objects, capable of being described and counted. On the other hand, citation analysis has certain disadvantages. Baird and Oppenheim (1994) point out the inequity of citations in terms of quality and influence, while Sandison (1989) comments that a citation is only one item from a small subset of those available of which the author is aware. Other criticisms discussed by MacRoberts and MacRoberts (1989) center around the failure to cite formal and informal influences. Many of these disadvantages, however, are more pertinent in the context of collection development and scholarly communication rather than in that of assessment of students' skills. A disadvantage, which is more significant in terms of skills assessment, is the complexity of citer motivations (e.g., serendipity in finding an item, ease of finding an item on the Internet).

As stated above, bibliographies can be obtained without the participation of the student authors. This is particularly true in the case of dissertations and theses that have been particularly popular in citation analysis studies. Recent notable studies in this area include the work of Buttlar (1999) and Sylvia (1998), both of whom examined doctoral dissertations, and that of Peritz and Sor (1990), who examined masters' theses. As Davis and Cohen (2001) and Oppenheim and Smith (2001) say, there have been fewer citation analysis studies of undergraduate research work since their assignments tend to be returned to them after assessment, leaving no 'repository' of their work.

Undergraduates, however, also use material relevant to the subject being studied and present lists of citations in coursework they submit. Studying citations can provide an account of the resources consulted in the research process and a measure by which to evaluate undergraduate scholarship. Citation analysis of undergraduate coursework has been conducted as part of the collection development process to determine the types of material used by undergraduates engaged in information gathering and as an indicator of the success of library training programs.

Collection management studies include those of Hardesty and Oltmanns (1989), which investigated citation practices of psychology undergraduates to identify core journals that

would satisfy most of the needs of that student group. Sylvia and Lesher (1995) also used citation analysis of student research papers to evaluate the use of the journal collection.

Recent studies on types of material used by undergraduates have frequently focused on the comparative use of print and electronic resources. Such studies include those of Burton and Chadwick (2000), Fescemyer (2000), Malone and Videon (1997), Oppenheim and Smith (2001), and two studies conducted at Cornell University (Davis, 2003; Davis & Cohen, 2001).

A number of studies have used citation analysis of undergraduate students' bibliographies as an indicator of the success of library training. Recent studies include Hovde (2000), Hurst and Leonard (2005), Oppenheim and Smith (2001), and Young and Ackerson (1995). One citation analysis study, which concentrated on undergraduate nursing students was that of Heller-Ross (2002), which was conducted at Plattsburgh State University, New York, and reviewed selected nursing course syllabi for research requirements and the resultant student bibliographies as an outcome assessment.

Callison (1997), investigating the techniques employed by investigators examining the information-seeking activity of students, has detected a shift towards the use of qualitative methods. Techniques based on questionnaires and citation analysis have given way to in-depth interviews, which facilitate a more detailed analysis of the information user's decisions and actions. Researchers such as Sylvia and Lesher (1995) have combined citation analysis with other methods of collection evaluation. Tenopir (2004) used 'think-aloud' protocol to capture affective and cognitive state information. In this study, it was decided to use focus groups to provide more reflective data.

Two focus groups were conducted with volunteers from the student cohorts who had undertaken the assignments. The groups were self-selecting, comprising students prepared to give up an hour of their time to participate. There were eight students in each focus group. The team addressed potential bias/coercion that could result from two members of the research team being personal tutors to participants. Research team members who were not directly involved in supporting or teaching the students facilitated the focus groups.

The focus groups were carried out using a framework outlining key areas for discussion and were tape-recorded. The participants were asked questions about the assignment (e.g., how they found it, what elements were easy, what elements proved more difficult, any information that was particularly hard to find, and what support they received in information seeking). Results were analyzed through categorization of key themes. The interdisciplinary team undertook categorization. Individuals took responsibility in the first instance to analyze the focus group data. The next level of analysis occurred when the whole team came together to share their individual categorization so a shared interpretation could be developed.

4. Results

The number of sources cited in each assignment was totaled (see Table 1). The mean number of references per assignment was 16. Interestingly, this is similar to the figure (16.54) found by Kraus and Fisher (2000) in their study of biology students. It is higher than the

Table 1
Number of references by assignment

Number of references	Number of assignments
0–10	6
11–15	14
16–20	10
21–25	4
>25	4
Total	38

mean of 8.5 for university undergraduates found by St. Clair and Magrill (1990), and the means of 7.54 (1998) and 7.37 (1999) in Heller-Ross's (2002) study of nursing students. Anecdotal evidence at Northumbria is that students cite more references now than they did two or three years ago, and this is certainly what Davis (2003) found in his research, which revealed that the average number of citations per bibliography grew from 11.3 in 1996 to 14.4 in 2001. A further breakdown was made of the dates of origin of the sources used in assignments.

Table 2 refers to the range in the published dates for the references used in the assignments. More than half (56%) of the sources were published in the 2000s, with several sources (15%) used being published in 2004. The majority (61.9%) of citations in Oppenheim and Smith's (2001) study were five years old or less. Oppenheim and Smith (2001) refer to the work of Price (reported in Meadows, 1998), which asserts that in 'hard' science at least 42% of all citations to literature should be no older than five years. The average age of citations in the Kraus and Fisher (2000) study, however, was 10.2 years for books or chapters and 9.26 years for journal articles. This study's figures, therefore, compare favorably, since the highest percentage of sources (29%) was represented by those aged between five and nine years. The second highest percentage was represented by references dated 2004. However, these comprised Web sites and information contained on these might not have originated in 2004. Nevertheless, there is evidence that students were using relatively up-to-date information.

Table 2
Dates of references used in assignments

Year	Number of references
Not clear	9
Before 1970	–
1970s	4
1980s	13
1990–1995	72
1996–1999	176
2000	51
2001	86
2002	53
2003	54
2004	88
Total	606

Further investigation may be merited into the reason for the high number (29%) of citations published between 1996 and 1999. It may be reflexive of a growth spurt in health needs analysis or it may reflect the stock of the learning resource centers used. In respect of earlier sources, only a small percentage was published in the 1970s (1%) and in the 1980s (2%). This small percentage of early sources is not necessarily indicative of use of out-of-date information since students may have been setting a context, commenting on the history of a disease or making a comparison between then and now.

The team categorized potential information sources by media type, based on prior experience of the citations in student assignments (see Table 3).

While a substantial amount of use (27%) was made of books, journals formed a larger percentage (37%) of the total references. Little use (1%) was made of secondary sources. The percentage of use made of books is lower than that found by Oppenheim and Smith (2001), which was 40.2%, but is comparable to that of usage in the Kraus and Fisher (2000) study (25%). However, in Kraus and Fisher's study, there was a much higher percentage of journal usage (67%) and a considerably lower percentage of Web use (only 1%). This may be partly explained by the fact that the students in the Kraus and Fisher study were biology undergraduates rather than nursing students and there are more health-related Web sites with provenance. Also, as the Davis (2003) study has demonstrated, there has been an increase over recent years in Web citation behavior among undergraduates. Since the Kraus and Fisher (2000) study predates this by four years, it would seem fair to assume that the upward trend identified by Davis (2003) has continued. The fact that nursing students use a higher percentage of journals than of books is pleasing, conforming as it does to expectations, given that health needs analysis requires primary information in order to make judgments.

The students had utilized a range of different medical, nursing, and social science journals. There was a lack of clarity about whether the issues of the journals they used were paper-

Table 3
Reference by category

Category	Number of references	%
Books	160	27
Nursing times/Nursing standard[a]	30	5
Other nursing journals	73	12
Medical journals	95	16
Other journals	24	4
Web-based	68	12
Secondary	8	1
UK gov pubs	86	14
Other agencies	15	2
Professional bodies	12	2
Others (charities 10, NHS trusts 8)	28	5
Total	606	

[a] Differentiation was made between the *Nursing Times* and *Nursing Standard* in Table 3 based on the expertise of the nursing academics who consider these more "popular" periodicals that are more readily available to students on placement, for example, since they are found on hospital wards and in common rooms as well as in libraries and resource centers. These were not as heavily used by the students as might have been anticipated.

based or electronic. This was the case with Malone and Videon's (1997) work, where they found undergraduate students confused about citation formats and that, in numerous cases, a source used might have been electronic but was cited as a hard-copy version by the students. Certainly, in this study, learning resources offered electronic access to a wide range of the journals cited and, given that the students were on placement, the likelihood is that they availed themselves of this service. Given the percentage (12%) of Web-based materials used, many of the students are familiar with electronic media. This may indicate a future for e-books with this student group.

The relatively high use of Web sites posed some problems when analyzing the data. Differentiation of such sources was not straightforward either for the students or for the researchers trying to break these down and categorize in the proformas. For example, is the Web site of a charitable body classified in the "Web-based" or "Other" section of Table 3? Where it was clear from the information provided that the source originated from a charitable body, it was allocated to the latter, but where the URL only was given and its origins were not immediately obvious, it was allocated to the former.

Web-based resources used in the assignments were examined further to assess their provenance. Details are given in Table 4.

Examination of the Web site addresses revealed that students had consulted international and national organizations, government bodies, statistical units, and academic institutions. All the sources were reputable. This was a pleasing result. The students may have consulted more items than they referenced.

Students were asked for their thoughts about information seeking for the assignment. Generally, they considered it had necessitated that they read widely and they acknowledged their need to support everything with references. With respect to what information seeking aspects of the assignment were easy, some had opted for a topic for which they knew much literature was available. They believed that the existence of Web sites facilitated their searching. What they found difficult about the assignment was that they had to thinkmore laterally, looking at the bigger picture. This corroborates the findings of Roberts (2004): "Few students displayed a holistic approach when acquiring information" (p. 211). They similarly had problems taking information from the primary care literature, applying it in the secondary context, and moving outside their usual parameters (e.g., into Environmental Sciences aspects).

They said that statistical data (especially local) and up-to-date material were hard to find although, from the analysis of the references, they were successful in both cases. Students without access to the Internet at home had difficulty accessing information. Support in information seeking was received from library and health center staff but the quality of support was variable with some staff being more helpful than others, and some centers having inadequate opening hours or limiting computer access, for example, not allowing Internet access. This is an issue of some concern, as is the difficulty experienced by those without

Notes to Table 4:

[a] Primary Care Trusts (PCTs) are independent statutory organizations with responsibility for improving the health care of the local population. They are usually responsible for an area matching the local council boundaries.

[b] BUPA provides private health care insurance, hospitals, and health care services.

Table 4
Web sites used for HNA project

Type of Web site	Web address
International	
World Health Organization	www.who.int
National – Government – Statistical	
National Statistics for Health	http://www.statistics.gov.uk
Employment Statistics	http://neighbourhood.statistics.gov.uk
National – Government – General	
Department of Health	http://www.dh.gov.uk/Home/fs/en
National Services Framework	http://www.dh.gov.uk/Policy&Guidance/Health&SocialCareTopics/fs/en#4613578
Our Healthier Nation (gateway)	www.ohn.gov.uk/ohn
National Health Service	
National Electronic Library for Health	www.nelh.nhs.uk
Cancer Screening	http://www.cancerscreening.nhs.uk
Health Development Agency	www.hda-online.org.uk
National Institute for Clinical Excellence Guidance & guideline documents	www.nice.org.uk
Regional – Government	
State of the Region Report 2003	www.northeastassembly.gov.uk/global/assets/documents/asset20031215041229.pdf
Regional – Primary Care Trusts[a]	
Newcastle	www.newcastlepct.nhs.uk
Newcastle & North Tyneside	www.nnt.nhs.uk
Organizations	
British Heart Foundation	www.bhf.org.uk
British Heart Foundation (statistics)	www.heartstats.org
British Liver Trust	http://www.britishlivertrust.org.uk
British Thoracic Society	www.brit-thoracic.org.uk
Cancer Research UK	www.cancerresearch.org.uk
Diabetes UK	www.diabetes.org.uk
International Diabetes Federation	http://www.idf.org
National Kidney Research Fund	www.nkrf.org.uk
Renal Association (registered charity)	www.renalreg.com
Academic	
Imperial College London	www.ic.ac.uk
Oxford University. Diabetes Trials Unit	www.dtu.ox.ac.uk.ukpds/results.html
York University. Centre for Reviews & Dissemination	www.york.ac.uk/inst/crd/em22b.htm
Private	
BUPA[b]	www.bupa.co.uk

Internet access from home, since it is important that students receive the same level of support and experience equity of access wherever possible.

In commenting on the relationship of health needs analysis to evidence-based practice, students stated that they believed that evidence was good if it came from the Department of Health Web site. Sifting through material and making judgements about it proved challenging, which may be indicative of a need for more critical and evaluative skills development. This would not only help hone their searching and retrieval skills but would assist them to become more analytical, judging and questioning in their approach to materials and reading thereof. Although one student referred to database searching using data sets, it became evident during discussion that others had failed to broaden their search terms, appearing to have adhered rigidly to words in the assignment title when searching. This suggests more guidance on searching skills would be useful.

5. Discussion

Generally, the nursing students demonstrated a pleasingly high level of proficiency, ability, and motivation. Their level of use of information was fairly high and they utilized a rich mixture of media. Skills needs appeared in respect of information searching of electronic media and in critical and evaluative skills in assessing sources retrieved. Access to libraries and learning resources is still important for the students, and a level of staff support is necessary and should be equitable for all students.

Up-to-date and official publications, especially those containing government dictates and statistical information, are important to those undertaking health needs analyses. Overall, information literacy is a key concept in nursing education.

6. Conclusion

As well as addressing some research agenda issues for the library and information community, this small-scale project meets the needs of the nursing academics (Cader, Derbyshire, Smith, Walton, & Gannon-Leary, in press). The health needs analysis assignment helped this group of students to investigate, understand, and contextualize the political health agenda. It not only appeared to shape their understanding but also the need for a varied and strong knowledge base necessary for influencing change. This concurs with the work of Utley-Smith (2004), who argues that nurse educators must give students a clear understanding of critical processes if they are to move nursing practice forward in the future.

The high level of debate in the focus groups led the research team to consider whether educators are capitalizing on the learning students gained from undertaking their assignments. Once the assignment has been submitted, students and teaching staff tend to move on to the next topic area; although connections may be made in the future, useful lessons for peer group development may have been lost. By the time the students have undertaken a study, they are in a better position to debate the surrounding issues, as was demonstrated in the focus groups.

They were not then preoccupied with the requirements and expectations of completing the assignment. Further debate after submission would have benefited both the students who achieved a high standard and those who had difficulty, since it could extend and clarify the arguments. Partnerships between nursing academics and information professionals, exemplified by the research team, should ensure that opportunities are afforded to nursing students and health professionals to develop continuously and hone their skills in locating/managing information and evaluating resources.

This study produces some issues where explanations are not straightforward. The heavy use of material published between 1996 and 1999 was not anticipated and further exploration is needed. It is evident that this study can be criticized in terms of its size and generalizability, and that the study of two undergraduate groups at one university cannot be considered representative of nursing students in general, but it is a useful indicator of ways in which academic and resource staff can work together to provide better help for students in a world where the ability to search for and judge information is key to determining and securing resources and quality care.

It has been argued that resources such as dissertations lend themselves more readily to citation analysis since they encompass a wider range of topics within a subject than something like coursework. However, the coursework chosen in this study involved the students electing to pursue a particular topic so there was variation based on this choice, resulting in a wider range of citations than might have been elicited by citations in a more directed assignment.

While most statistical analysis requires either a large population or conspicuously different results between data sets in order for researchers to draw significant conclusions, even small scale uses of statistical research methods can provide benefits for a single institution (ACRL, 1998). Certainly, as Heller-Ross (2002) points out with respect to her own research, studies such as these help to direct the process of closing the loop between the provision of services and the assessment of outcomes.

This was a small-scale project but there is potential for further work in this area. This project was confined to BSc (Hons) Nursing Studies program (adult branch students) but it could be replicated with nursing students in the mental health and child branches who also undertake a health needs analysis assignment.

Some research questions remain unanswered. For example, will nursing students still apply the skills demonstrated when they are in practice? Will the use of hybrid resources continue or will more reliance be placed on electronic materials? Comparative studies could be made in several areas—for example with other studies on the popularity of journals as a source for health professionals; with usage of materials by other health students (for example medical students); and with information seeking by students from other disciplines.

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