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Preparing for professional practice: How well does professional training equip health and social care practitioners to engage in evidence-based practice?

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Accepted 29 August 2006

KEYWORDS

Professional practice;
Evidence-based;
Education

Summary This paper reports on the findings of a study that aimed to explore how relevant initial training is in relation to evidence-based practice, and explore the perceptions of recently qualified practitioners about their confidence to engage in evidence-based practice. A cross-sectional postal survey was used to ascertain the views of nurses, social workers, occupational therapists and physiotherapists who had been qualified no longer than two years prior to the survey, and had qualified at one of three London Universities. Fifty questionnaires were sent out to each professional group (a sample of 200 overall) and there was a 43% response rate achieved. The results show a clear discrepancy between what are generally positive attitudes towards evidence-based practice and the value of research evidence and the infrequency with which they actually do make use of research resources and engage in evidence-based practice. A number of constraints to engagement in accessing and utilising evidence were identified.

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Introduction

The constantly changing nature of health and social care practice necessitates continuous development of educational programmes to prepare practitioners for practice. However there is evidence that, in several key areas of practice, practitioners are

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not as effective as they could, or indeed should, be. One area that has been particularly highlighted in the literature is the ability of practitioners to engage in evidence-based practice. This paper reports on one area of a larger study examining cancer and palliative care, evidence-based practice and team working across professional groups. The present paper focuses on the evidence-based practice component of the study and aims to:

- Explore how relevant initial training is in relation to evidence-based practice.
- Explore the perceptions of recently qualified practitioners about their confidence to engage in evidence-based practice.

The key objectives were to:

- Ascertain the ways in which recently qualified practitioners engage in evidence-based practice.
- Determine how confident recently qualified practitioners are in engaging in evidence-based practice.
- Establish the nature of educational input in relation to evidence-based practice.

Background and literature

In the United Kingdom the introduction of clinical governance has highlighted the demand for better, easier and safer health care (DoH, 1997; DoH, 2000). Clinical governance has been defined as 'A framework through which NHS organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish' (DoH, 1998, p. 33). However, the difficulties in implementing evidence-based practice are well documented and several studies have highlighted the limited success of strategies employed to increase evidence utilization (Hunt, 1987; Hodnett et al., 1996; Hindley et al., 2000). The challenges inherent in implementing evidence-based practice are both complex and multi-factorial. Rycroft-Malone et al. (2004) argue that this requires the recognition of evidence, context and facilitation as key elements in the implementation process.

Continued professional development aims to ensure professionals remain competent and committed practitioners. One way of ensuring competence is through requiring evidence-based practice. Clinical decision-making informed by evidence-based practice is a policy aim (DoH, 2004). Indeed most healthcare professionals are introduced to research

methods and critical appraisal early in their training. However, researchers have identified barriers that may impede qualified professionals from becoming evidence-based practitioners. Lack of time is perceived by therapists, general practitioners and nurses to be the major barrier to implementing evidence-based practice (Tomlin, 1999; Humphris et al., 2000; Curtin and Jaramazovic, 2001; Nagy et al., 2001; Vallino-Napoli and Reilly, 2004; McKenna et al., 2005; Zipoli and Kennedy, 2005). Nagy et al. (2001) report that nurses expressed a lack of confidence in the willingness of their organisation to support evidence-based practice. The combination of this lack of confidence and the perceived time constraints could be related to the fact that some professionals, e.g. nurses, reported problems in interpreting and using research (McCaughan et al., 2002). Mullen et al. (2005) suggest that few social work practitioners employ evidence-based approaches and highlight how little is known about facilitating knowledge transfer. Similarly Booth et al. (2003) highlighted poor preparation of the social care workforce for engagement in evidence-based practice. Cameron et al. (2005) found that only a minority of their sample of occupational therapists used the principles of evidence-based practice to plan clinical interventions, and that this decreased with increasing years in practice.

Evidence shows that participation in research led activities is associated with clinical expertise and with involvement in continuous quality improvement programmes (Thompson et al., 2001; Wallin et al., 2003). However, Estabrooks et al. (2003a) conducted a systematic review to examine individual characteristics of nurses and how these influence the utilisation of research. Six categories of individual determinants were identified: beliefs and attitudes, involvement in research activities, information seeking, professional characteristics, education, and other socio-economic factors. The results from the systematic review suggest that the effects of these factors upon research utilisation remain largely unknown. The authors suggest that the identified set of potential determinants is likely to be interrelated.

A second barrier concerns health practitioners' perceptions of the inaccessibility of research evidence (McColl et al., 1998; Parahoo et al., 2000; Retsas, 2000; Rodgers, 2000a,b). Webster et al. (2003) found that only one third of nurses from a sample of 590 nurses in Australia used computers regularly to access resources such as MEDLINE, CINAHL and the Cochrane Library. Over 30% of nurses believed that accessing research evidence, as an individual practitioner was an ineffective use of time that detracted from patient care. Evidence

would be more accessible if it were embedded within readily accessible policies or care pathways. This would also mean less duplication of work for individual practitioners. Estabrooks et al. (2003b) perceived that nurses' use of the Internet was low when compared to other professional groups because nurses preferred to use personal experiences and communication with colleagues and patients to inform clinical practice. Rycroft-Malone et al. (2004) highlights from her study that nurses themselves shared this perception.

Some research has questioned whether practitioners have adequate skills and training to use information technology (IT). A survey by Griffiths and Riddington (2001) investigated the use of computers by nurses in a large inner city teaching hospital. The authors found that 75% of nurses were unaware of the existence of the Cochrane Library and that only 18% of respondents used MEDLINE regularly with 34% expressing low confidence in their abilities to use CINAHL. Likewise McColl et al. (1998) used a questionnaire survey to ascertain general practitioners' perceptions of evidence-based practice. The authors found there was a low level of awareness of methods of extracting journals, as well as the existence of review publications and databases. Pravikoff et al. (2005) in a study of US nurses' readiness for evidence-based practice found that 82% did not use the hospital library and 77% had never received instruction in the use of electronic resources. A study by McNeil et al. (2003) that involved an online survey of deans and directors of 266 baccalaureate and higher nursing programmes in the United States found that the academic programmes were addressing computer literacy rather than information literacy and that accessing resources rather than the content of those resources was emphasized. A study of IT competencies requirement in Singapore nursing education was carried out by Yee (2002) found that nurse educators and managers made a distinction between 2 levels of IT skills basic and advanced specialized work-related skills.

A third barrier concerns the relevance of research findings (Kajermo et al., 2000). In particular nurses perceived that a potential barrier for not using research information in clinical decision making was that research findings lacked clinical credibility (Nagy et al., 2001). Specifically, research designs that were far removed from usual clinical practice and results that were not obviously transferable to individual clinical cases were perceived to reduce the value of the findings. Relatedly, Fleisher et al. (1998) reflected upon their experience in the development and implementation of three research projects within the National Cancer Insti-

tute of Cancer Information Service. The authors recommended that research be integrated within a service program with the aim of ensuring consistency with current practice and the value of research to staff.

Methods

Study design

A cross sectional quantitative survey design was used. This is a design that has been used widely in the development of knowledge in relation to how professionals engage in evidence-based practice, and what enhances and constrains this engagement. There have been a number of surveys of nurses' attitudes to and use of research (Rodgers, 1994, 2000a,b; McSherry, 1997; Parahoo, 1999), as well as of other professional groups (Booth et al., 2003; Zipoli and Kennedy, 2005; Cameron et al., 2005). Similarly there have also been surveys of barriers to nurses' research utilization (Webster et al., 2003) and that of other professional groups (Humphris et al., 2000; Curtin and Jaramazovic, 2001). Surveys have also been used to ascertain the information sources used to inform evidence-based practice of nurses (Griffiths and Riddington, 2001) and other professional groups (Vallino-Napoli and Reilly, 2004; McKenna et al., 2005). We felt that the use of a cross-sectional survey had the greatest potential for achieving our primary research objectives, and whilst it would not have any explanatory power it would serve the purpose of establishing patterns and trends in relation to the views and perceptions of recently qualified health and social care staff on evidence-based practice.

Sample

The population was UK based graduates in nursing, occupational therapy, physiotherapy, and social work who had completed their undergraduate training between December 2001 and June 2003 (therefore qualified for no more than 2 years) at three London universities. A total of 50 graduates from each professional category were sampled to give an overall sample of 200. Where graduates from a professional category were from more than one university, the sample was split equally between those universities as shown in Table 1, below:

The sample was randomly generated from the universities' graduate databases by university data managers not otherwise involved in the study.

Table 1 Sample by university and profession

Profession	University 1 (n)	University 2 (n)	University 3 (n)
Nursing	25	25	
Occupational therapy	25		25
Physiotherapy			50
Social work		25	25

Data collection methods

Whilst there were no existing questionnaires that met our needs, we used key themes identified from the literature to ensure validity, and developed a structured anonymous postal questionnaire. An attempt to minimise the potential for self-reporting bias was made by including questions to contextualise the responses to current practice. The following components, which have been identified as key issues in the literature or key to answering our research questions were included. The following questions were closed and presented with fixed-alternative answers:

- Demographic characteristics of the respondent including profession; length of time qualified; where qualified; academic level at which qualified; sector in which currently employed.
- Pre-qualifying educational preparation for evidence-based practice including specific research methods training; experience of undertaking a research project.
- Skills training for evidence-based practice including literature searching; critical appraisal.
- Access to bibliographic databases frequency and location.
- Experience of research changing practice.

The following areas were addressed as a set of statements that were presented with a five point Likert scale response grid (strongly agree; agree; unsure; disagree; strongly disagree):

- Views on the relevance of research to practice.
- Views on key aspects of evidence-based practice including employer encouragement; importance of evidence to practice for own and other professional groups; time available to own and other professional groups to implement evidence-based practice.
- Demands of evidence-based practice.
- Confidence to engage in evidence-based practice.

In order to maximise the level of validity and reliability the questionnaire was piloted on a random sample of 20 recently qualified nursing and social work graduates from one of the participating universities (who were not later included in the main study). Minor refinements were made to the wording of questions and instructions for completion. The questionnaires were sent out with a participant information sheet stating the nature and purpose of the research. An envelope stamped and addressed to the Principal Investigator was included with the mailing. Two chasing letters were sent to non-respondents three weeks and six weeks, respectively after the original mailing.

Data analysis methods

Responses were coded and inputted to SPSS and subjected to descriptive statistical analysis. The number of respondents relative to professional groups was too small to determine statistically significant differences between professions, although patterns of responses were markedly similar across all professional groups.

Ethical issues

Ethical approval was obtained from two of the participating University Ethics Committees, the third university accepted this approval and did not require additional application to their own University Ethics Committees. The study was conducted in compliance with the Data Protection Act, 1998.

Results

Demographic characteristics of the sample

Eighty-five respondents completed questionnaires, giving a response rate of 43%. Sixty-six participants responded to the original mailing, a further 16 to the second mailing, and an additional three to the third and final mailing. Of the 85 respondents, around a third were social workers ($n = 26$), a further third were occupational therapists ($n = 29$), just over a fifth were nurses ($n = 19$), and just over 10% were physiotherapists ($n = 10$) (Fig. 1).

Respondents had all qualified at one of the three participating universities in London (Fig. 2). A higher response rate was obtained from University 3 ($n = 36$, 42%) than from either University 1 ($n = 13$, 15%) or University 2 ($n = 28$, 33%).

Around half of all respondents ($n = 43$) had been qualified for between 12 and 18 months, with

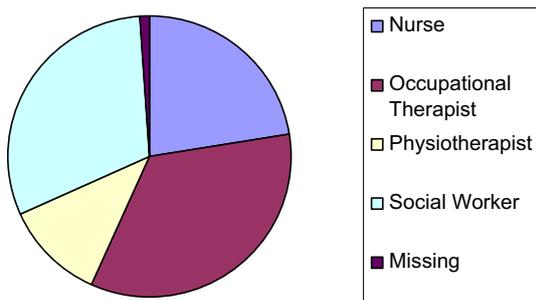


Figure 1 Profession of respondents.

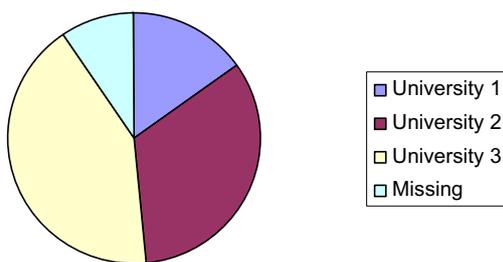


Figure 2 University at which respondent qualified.

almost one in five ($n = 19$) being qualified for less than six months, and a similar proportion ($n = 23$) being qualified for between 18 months and two years (Fig. 3), and there were no apparent differences in this distribution across professional groups.

In terms of academic qualification, over 75% of respondents ($n = 64$) had obtained their professional qualification at undergraduate diploma or degree level (Fig. 4). It is worth noting that a fairly high proportion ($n = 14$, 16%) had masters degree qualifications, which reflects the provision of a pre-qualifying social work award at this level at one of the universities in the study.

Respondents were asked in which sector they were now employed (Fig. 5). More than a third were employed in acute settings ($n = 32$) and just over a quarter (mainly social workers) in local

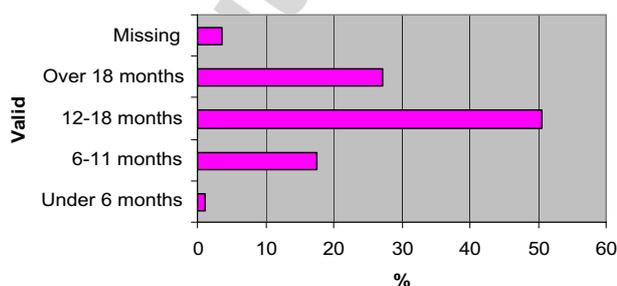


Figure 3 Length of time qualified.

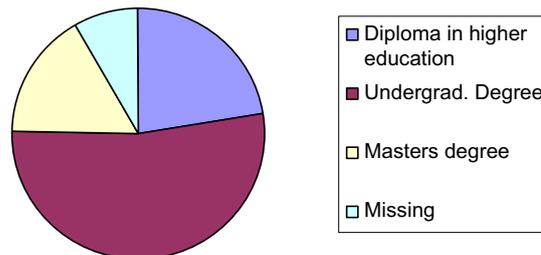


Figure 4 Academic level at which respondent qualified.

authorities ($n = 24$). A small number were employed in independent or voluntary settings ($n = 5$).

Relevance of research to practice

Participants were asked how relevant research findings were to their current area of practice. A large majority ($n = 82$, 96%) reported that they were very ($n = 45$, 53%) or fairly ($n = 37$, 44%) relevant, with only three respondents viewing research as not at all important. Eighty-one (95%) had received research methods teaching during their initial education and training and of these 33 (41%) had shared this teaching with colleagues from other professions. Occupational therapists and social workers reported higher levels of shared learning than did nurses and physiotherapists, although this was not a statistically significant difference. Of the respondents 74 (88%) had carried out a research project as part of their training, and nurses ($n = 11$, 14.9%) and physiotherapists ($n = 10$, 13.5%) were less likely to have done this than were social workers ($n = 25$, 33.8%) and occupational therapists ($n = 28$, 37.8%) although not statistically significant. Over three quarters of respondents ($n = 65$, 76%) across all professional groups felt that greater emphasis should be placed on evidence from research informing service delivery and practice. However, only 19 (22%) said that research findings were frequently discussed at work, with the same number stating that they were never discussed. The majority of respondents ($n = 47$, 55%) stated that research findings were only occasionally discussed. There were no apparent differences between professional groups in relation to how frequently they reported discussions about research findings occurring at work.

Respondents were asked whether they could think of an example where professional practice had changed as a result of accessing research findings. Although there was a mixed response (Table 2), 36 (42%) were able to think of an example. When considering responses by profession,

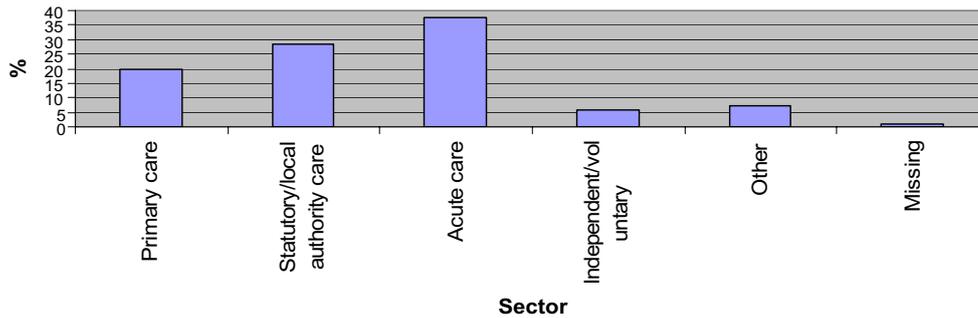


Figure 5 Sector in which respondents were currently employed.

Table 2 Examples where professional practice has changed due to accessing research evidence

Can you think of an example where professional practice has changed as a result of accessing research findings?	n = 85
Yes	36 (42%)
No	17 (20%)
Not sure	23 (27%)
Total	76 (89%)
Missing	9 (11%)

Table 3 Location of access to bibliographic databases

Where do you currently have access to bibliographic databases?	n = 85 (respondents can give more than one answer)
Home	27 (32%)
Work	49 (58%)
Professional library	42 (49%)
Elsewhere	3 (4%)
No regular access	13 (15%)
Missing	10 (12%)

although numbers were too small to demonstrate statistical significance, it could be seen that occupational therapists less likely than other professionals to report examples of professional practice changing due to accessing research evidence. Twelve (70.6%) of the 17 respondents stating that they had no such examples were occupational therapists and 4 (23.5%) were social workers. Only 1 (5.9%) nurse and none of the physiotherapists responded similarly.

Accessing research evidence

Respondents were asked how often, if at all, they had used online bibliographic databases such as MEDLINE or CAREDATA during the previous year. Thirty-four respondents (40%) stated never, and a further 14 (16%) had only made use of such databases on one or two occasions. Responses were consistent across all professional groups. Those who did access bibliographic databases were asked where they had access (Table 3). Most respondents had access at home, at work or through a professional library. A worrying 13 (15%) reported that they had no access at all. Again there were no apparent differences in location of access to bibliographic between the professional groups.

The majority of respondents (n = 65, 76%) stated that they had received formal training in how to conduct a literature search. Most respondents had received this as part of their professional education and training, or as part of an educational programme not related to professional practice (Table 4). There were no apparent differences across professional groups with around two in three across all groups having received specific training in literature searching during initial training. In relation to those who reported that they had received such training as part of university/college education not

Table 4 Location of training in research literature searching

Where did training in research literature searching take place?	n = 85 (respondents can give more than one answer)
As part of initial professional practice education/training	56 (66%)
University/college education not related to professional practice	21 (25%)
Short course at workplace	10 (12%)
Other course	1 (<1%)

related to their professional training 12 (57.1%) of these were social workers all but one of whom had undertaken their professional training at Masters level.

Respondents were also asked whether they had received training in critical appraisal of research, and where this had occurred (Table 5). Fifty-six respondents (66%) had received such training, with most ($n = 49$, 58%) receiving it during their professional education and training. Again the only difference between professional groups was in relation to the respondents who reported having specific

training in critical appraisal of research in university/college education not related to professional practice, where 12 (80%) were social workers 10 (66.6%) of whom had undertaken their professional training at masters level.

Views on evidence-based practice

Respondents were asked to respond to statements about different aspects of evidence-based practice, and 83 (98%) respondents completed this section. Although the questionnaire used a 5 point Likert scale, the strongly agree/agree and the disagree/strongly disagree have been combined as numbers were small. There was no significant association demonstrated between profession and response (Table 6).

It was encouraging to note that of those who responded to this section just under two thirds ($n = 54$, 65%) strongly agreed/agreed that their employers encouraged them to read research literature relevant to their practice. Almost three-quarters of respondents ($n = 60$, 72%) strongly agreed/agreed that most colleagues from their professional background were in favour of evidence based practice although over half ($n = 48$, 58%) strongly agreed/agreed that they did not have time to implement evidence-based practice. Six out of ten respondents ($n = 50$, 60%) strongly agreed/agreed that colleagues from different

Table 5 Location of training in critical appraisal of research

Where did training in critical appraisal of research literature take place?	$n = 85$ (respondents can give more than one answer)
As part of initial professional practice education/ training	49 (58%)
University/ college education not related to professional practice	15 (18%)
Short course at workplace	7 (8%)
Other course	1 (<1%)
Missing	13 (15%)

Table 6 Views on evidence-based practice

	Strongly agree/ agree	Neutral	Strongly disagree/ disagree	Missing	Total	Median
I am encouraged by my employer to read research literature relevant to my practice	54	15	12	2	83	Agree
I feel that most colleagues from <i>my own professional background</i> are in favour of using research evidence in their practice	60	17	6	0	83	Agree
I feel that most colleagues from <i>my own professional background</i> do not have time to implement evidence based practice	48	11	23	1	83	Agree
I think my professional practice would improve if I had greater access to research literature	55	21	7	0	83	Agree
I feel that most of my colleagues from <i>different professional backgrounds to my own</i> are in favour of using research evidence in their practice	50	30	3	0	83	Agree
I feel that most of my colleagues from <i>different professional backgrounds to my own</i> do not have time to implement evidence based practice effectively	40	25	18	0	83	Neutral
I feel that the adoption of evidence based practice is an additional demand on practitioners	46	15	22	0	83	Agree
I feel I have gained confidence to implement evidence based practice through studying research methods	54	22	7	0	83	Agree

professional groups were in favour of evidence based practice, although just under half ($n = 40$, 48%) strongly agreed/agreed that they did not have time to implement this. Whilst just over half of the respondents ($n = 46$, 55%) strongly agreed/agreed that the adoption of evidence based practice was an additional demand on practitioners, a significant minority ($n = 22$, 27%) strongly disagreed/disagreed that this was the case. Two thirds of respondents strongly agreed/agreed that their professional practice would improve if they had greater access to research literature and a similar proportion ($n = 54$, 65%) strongly agreed/agreed that they had developed confidence to implement evidence based practice through studying research methods. There were no apparent differences across professional groups in relation to their views on evidence-based practice.

Discussion

Limitations

There are a number of limitations to the study that have a bearing on the generalisability of the results. Firstly, the university graduate databases cannot be assumed to be comprehensive as they are not routinely updated. Therefore, it cannot be assumed that the databases accurately represent the population. Furthermore it is not known whether the accuracy of such databases varies across professional groups or between universities. This compromises any comparability between universities or professions. Additionally, the total number of graduates meeting the inclusion criteria in each database is not known. Therefore, sampling fractions cannot be calculated. The sampling methods employed by the data managers from each university are not known and may not be comparable. Data managers were provided with the inclusion criteria and were instructed to generate a random sample. The exact sampling methods used were left to each data manager.

The use of a self-reporting tool to measure relevance of initial training to evidence-based practice and perceptions of confidence to engage in evidence-based practice may have subjected the findings to an over-reporting bias, and this may explain the variance between practitioners' positive reporting of their confidence in engaging with evidence-based practice, and the relative infrequency with which they actually do so when measured by their reporting of an example where research has

changed practice. The questionnaire requires further testing across a wider range of professional groups to establish validity and reliability outside of those groups included in this study.

Response rate

The overall response rate achieved of 43% was low. This may reflect that the graduate databases are not routinely updated. As addresses are only known to be correct at the time of graduation and it is possible that questionnaires were sent to out of date addresses. This may be one reason for non-response. There is a marked difference in the response rates between the different professional groups ranging from a response rate of 58% ($n = 29$) for occupational therapists and 52% ($n = 26$) for social workers, to a 38% ($n = 1$) for nurses and only 20% ($n = 10$) for physiotherapists. The different career pathways involved in each profession may offer an explanation for this. In the case of physiotherapists and nurses, the skill set required varies significantly between different specialities where the nature of the clinical work is closely bound to the diagnosis. This means that those occupying junior grade posts are more likely to move around between posts to build up their clinical experience. This increases the possibility that addresses for nurses and physiotherapists on the graduate databases were out of date. In contrast, the skills required for both occupational therapy and social work are more transferable between different practice areas. This is reflected in the pattern for occupational therapists and social workers to stay in their first post for a comparatively longer period of time. This increases the possibility that the database addresses for this professional group were more accurate.

How do respondents engage in evidence-based practice?

Although a large majority of respondents viewed research findings as relevant to their current area of practice and almost three quarters reported that research findings were discussed either frequently or occasionally at work, only 36 (42%) of respondents were able to think of a case where practice had changed as a result of evidence. The fact that respondents had only recently qualified may offer a partial explanation for this finding, and this would be supported by both [Thompson et al. \(2001\)](#) and [Wallin et al. \(2003\)](#) who were able to demonstrate an association between research participation and developing clinical expertise. Recently qualified

practitioners may find themselves in a comparatively junior role and may not be aware of the reasons behind a change in practice. This finding could also relate to the nature of the audit cycle that precipitates and precedes a change in practice. This is frequently a lengthy process and these recently qualified practitioners may not have been in post for long enough to experience a complete cycle, including changes in practice. For nurses and physiotherapists who are more likely to move across junior posts, this may be an experience they do not encounter until a relatively senior stage in their career.

Despite the importance they accorded research evidence, respondents across all four professional groups were less proactive about using research resources, with around two thirds of respondents accessing bibliographic databases twice or less during the previous twelve-month period, which is similar to the findings of Webster et al. (2003) in relation to nurses and McColl et al. (1998) in relation to General Practitioners indicating that this is not simply a nursing phenomenon. Given that a significant proportion of practitioners in our study had been qualified for less than 12 months, the number of professionals who had made use of bibliographic databases in their professional lives, as opposed to during their time as a student, could well be much lower. When considering the academic requirements of professional courses, it would be reasonable to expect that all respondents would have developed familiarity with, and the skills required to make effective use of, such databases. This may suggest that there could be a mismatch between academic and practice information technology skills, which would appear to align with the findings of McNeil et al. (2003) that the focus of nursing education was on using computers to access rather than use information.

A large majority of respondents stated that they had access to electronic bibliographic databases, and that they were encouraged by their employers to read research literature relevant to their practice. However, this stands in contrast to the numbers of respondents regularly using such databases, and those who felt that their practice would improve if they had greater access to research literature. Availability of access does not necessarily mean convenience and ease of access, and the lack of time required to implement evidence-based practice that we found and that has been reported in numerous previous studies across different professional groups (Tomlin, 1999; Humphris et al., 2000; Curtin and Jaramazovic, 2001; Nagy et al., 2001) could be considered as a significant factor for access. Our results suggest

that mere availability of computers may not be enough to enable practitioners to regularly and confidently engage in evidence-based practice. Unlike Estabrooks et al. (2003b) and Rycroft-Malone et al. (2004) who state that nurses' use the Internet less than other professional groups we found no such difference between the four professional groups that were studied.

How confident are respondents in their abilities?

On the one hand the results suggest that just under two thirds of respondents feel confident in their abilities, with practitioners stating they had gained in confidence to implement evidence-based practice through studying research methods. However the infrequency with which practitioners actually do engage in evidence-based practice does not bear this out. It could be suggested that their level of confidence in the methodology of evidence-based practice does not equate with an ability to implement their knowledge and skills in the practice setting. This is in line with the findings of McNeil et al. (2003) who highlights the gap between education and practice in relation to the IT components of nursing programmes

What is the nature of educational input in relation to evidence-based practice?

The results of the present study regarding educational input concerning evidence-based practice stand in contrast to results of previous studies that suggest professionals have not received adequate training in the knowledge and skills required for evidence-based practice (McColl et al., 1998; Griffiths and Riddington, 2001). In the present study over three quarters had received training in how to conduct a literature search and almost 70% had received training in the critical appraisal of research and almost 90% of respondents had undertaken some sort of research project during their initial training. The fact that nurses and physiotherapists were less likely to have shared learning in relation to evidence-based methods or had the opportunity to engage in a research project, than occupational therapists and social workers did not appear to have any impact on their subsequent engagement in evidence-based practice once qualified. What is evident, however, is a deficit in relation to the knowledge and skills required to apply their knowledge and skills in the practice setting. This could be seen to relate to the findings of Pravikoff et al. (2005) that in the professional nursing

workforce in the USA there is a knowledge and skills gap in relation to evidence-based practice that is related to a significant majority of the workforce having received their basic professional education before the widespread introduction of IT into the healthcare setting.

Conclusions

Although the results of the present study are compromised to a certain extent by the low response rate, conclusions can still be drawn concerning implications for initial and continuing professional education and for further research.

The results show a clear discrepancy between the positive attitudes towards evidence-based practice and the value of research evidence on the one hand and the infrequency with which they actually do make use of research resources and engage in evidence-based practice. Whilst this study does not identify nurses as being significantly disadvantaged in relation to education for evidence-based practice when compared to the other three professional groups included in this study there are, nevertheless several recommendations that can be made in relation to pre-qualifying nursing education:

- The teaching of evidence-based practice skills need practical application and critical reflection in order for clinical decision-making to be fully contextualised.
- The skills of applying evidence-based knowledge and skills need to be addressed.
- Practice as well as theoretical learning outcomes in relation to evidence-based practice should be explicit.

Likewise there are also recommendations that can be made in relation to the continuing professional development of nurses:

- Gaps in knowledge and skills for evidence-based practice need to be clearly identified, and a rolling programme for addressing these should be developed in the workplace.
- Regular opportunities for skills update should be made available.

There are several recommendations for further research. Further retrospective research could build on the results of the present study by examining in more depth whether any differences exist between professional groups in ability to engage in evidence-based practice as they advance in their

careers. Prospective research could examine the effectiveness of specific educational programmes in promoting and enabling evidence-based practice. Qualitative studies to explore in depth the possible explanations for the apparent incongruence of the levels of confidence and the levels of engagement in evidence-based practice found in this study has potential for enabling effective strategies for developing strategies to enhance evidence-based practice.

References

- Booth, S., Booth, A., Falzon, L., 2003. The need for information and research skills training to support evidence-based social care: a literature review and survey. *Learning in Health and Social Care* 2 (4), 191–201.
- Cameron, K., Ballantyne, S., Kulbitzy, A., Margolis-Gal, M., Daugherty, T., Ludwig, F., 2005. Utilization of evidence-based practice by registered occupational therapists. *Occupational Therapy International* 12 (3), 123–136.
- Curtin, M., Jaramazovic, E., 2001. Occupational therapists' views and perceptions of evidence base practice British. *Journal of Occupational Therapy* 64 (5), 215–222.
- Department of Health, 1997. *The New NHS. Modern, Dependable*. HMSO, London.
- Department of Health, 1998. *A First Class Service Quality in the New NHS Circular HSC(98)*, 113. Department of Health, London.
- Department of Health, 2000. *The NHS Plan. A Plan for Investment. A Plan for Reform*. HMSO, London.
- Department of Health, 2004. *Standards for Better Health*. HMSO.
- Estabrooks, C., Floyd, J., Findlay-Scott, S., O'Leary, K., Gushta, M., 2003a. Individual determinants of research utilization: a systematic review. *Journal of Advanced Nursing* 43 (5), 506–520.
- Estabrooks, C., O'Leary, K., Ricker, K., Humphrey, C., 2003b. The internet and access to evidence: how are nurses positioned? *Journal of Advanced Nursing* 42 (1), 73–81.
- Fleisher, L., Woodwoth, M., Morra, M., Baum, S., Darrow, S., Davies, S., Perocchia-Slevin, R., Stengle, W., Ward, J., 1998. Balancing research and service: The experience of the cancer information service. *Preventive Medicine* 27 (5, Part2), 84–92.
- Griffiths, P., Riddington, L., 2001. Nurses' use of computer databases to identify evidence for practice—a cross-sectional questionnaire survey in an UK hospital. *Health information and Libraries Journal* 18 (1), 2–9.
- Hodnett, E., Kaufman, K., O'Bruien-Pallas, L., Chipman, M., Watson-Macdonell, J., Hunsberger, W., 1996. A strategy to promote research-based nursing care: effects on childbirth outcomes. *Research in Nursing and Health* 19, 13–20.
- Hindley, V., Milne, J., Leighton-Buck, L., Graham, W., Fitzmaurice, A., 2000. Raising research awareness among midwives and nurses: does it work? *Journal of Advanced Nursing* 31 (1), 78–88.
- Hunt, M., 1987. The process of translating research findings into nursing practice. *Journal of Advanced Nursing* 12 (1), 101–110.
- Humphris, D., Littlejohns, P., Victor, C., O'Halloran, P., Peacock, J., 2000. Implementing evidence-based practice: Factors that influence the use of research evidence by occupational therapists. *British Journal of Occupational Therapy* 63 (11), 516–522.

- Kajermo, K., Nordstrom, G., Krusebrant, A., Bjorvell, H., 2000. Perceptions of research utilization: comparisons between health care professionals, nursing students and a reference group of nurse clinicians. *Journal of Advanced Nursing* 31 (1), 99–109.
- McCaughan, D., Thompson, C., Cullum, N., Sheldon, T., Thompson, D., 2002. Acute care nurses' perceptions of barriers to using research information in clinical decision-making. *Journal of Advanced Nursing* 39 (1), 46–60.
- McCull, A., Smith, H., White, P., Field, J., 1998. General practitioners' perceptions of the route to evidence based medicine: a questionnaire survey. *British Medical Journal* 316 (7128), 361–365.
- McKenna, K., Bennett, S., Dierselhuis, Z., Hoffmann, T., Tooth, L., McCluskey, A., 2005. Australian occupational therapists' use of an on-line evidence-based practice database (OTseeker). *Health Information and Libraries Journal* 22 (3), 205–214.
- McNeil, B., Elfrink, V., Bickford, C., Beyea, S., Averill, C., Klappenbach, C., 2003. Nursing Information Technology knowledge, skills and preparation of student nurses, nursing faculty, and clinicians: a US survey. *Journal of Nursing Education* 42 (8), 341–349.
- McSherry, R., 1997. What do registered nurses and midwives feel and know about research? *Journal of Advanced Nursing* 25, 985–998.
- Mullen, E.J., Shlonsky, A., Bledsoe, S.E., Bellamy, J.L., 2005. From concept to implementation: challenges facing evidence-based social work. *Evidence and Policy A Journal of Research, Debate and Practice* 1 (1), 61–84.
- Nagy, S., Lumby, J., McKinley, S., Macfarlane, C., 2001. Nurses' beliefs about the conditions that hinder or support evidence-based nursing. *International Journal of Nursing Practice* 7 (5), 314–321.
- Parahoo, K., 1999. A comparison of pre-Project 200 and Project 2000 nurses' perceptions of their research training, research needs and their use of research in clinical areas. *Journal of Advanced Nursing* 29, 237–245.
- Parahoo, K., Barr, O., McCaughan, E., 2000. Research utilisation and attitudes towards research amongst learning disability nurses in Northern Ireland. *Journal of Advanced Nursing* 31 (3), 607–613.
- Pravikoff, D., Tanner, A., Pierce, S., 2005. Readiness of U.S. nurses for evidence-based practice: Many don't understand or value research and have had little or no training to help them find evidence on which to base their practice. *American Journal of Nursing* 105 (9), 40–51.
- Retsas, A., 2000. Barriers to, and facilitators of, research utilisation among nurses in Northern Ireland. *Journal of Advanced Nursing* 31 (3), 89–98.
- Rodgers, S., 1994. An exploratory study of research utilization by nurses in general medical and surgical wards. *Journal of Advanced Nursing* 20 (1), 904–911.
- Rodgers, S., 2000a. The extent of nursing research utilisation in general medical and surgical wards. *Journal of Advanced Nursing* 32 (1), 182–193.
- Rodgers, S., 2000b. A study of utilization of research in practice and the influence of education. *Nurse Education Today* 20 (4), 279–287.
- Rycroft-Malone, J., Harvey, G., Seers, K., Kitson, A., McCormack, B., Titchen, A., 2004. An exploration of factors that influence the implementation of evidence into practice. *Journal of Clinical Nursing* 13 (8), 913–924.
- Thompson, C., McCaughan, D., Cullum, N., Sheldon, T., Mulhal, I.A., Thompson, D., 2001. The accessibility of research-based knowledge for nurses in United Kingdom acute care settings. *Journal of Advanced Nursing* 36 (1), 11–22.
- Tomlin, Z., 1999. General practitioners' perceptions of effective health care. *British Medical Journal* 318 (7197), 1532–1535.
- Vallino-Napoli, L., Reilly, S., 2004. Evidence-based health care: a survey of speech pathology practice. *Advances in Speech-Language Pathology* 6 (2), 107–112.
- Wallin, L., Bostrom, A., Wikblad, K., Ewald, U., 2003. Sustainability in changing clinical practice promotes evidence-based nursing care. *Journal of Advanced Nursing* 41 (5), 509–518.
- Webster, J., Davies, J., Holt, V., Stallan, G., News, K., Yegdich, T., 2003. Australian nurses' and midwives' knowledge of computers and their attitudes to using them in practice. *Journal of Advanced Nursing* 41 (2), 140–146.
- Yee, C., 2002. Identifying Information Technology competencies needed in Singapore nursing education. *Computers Informatics Nursing* 20 (5), 209–214.
- Zipoli, R., Kennedy, M., 2005. Evidence-based practice among speech-language pathologists: attitudes, utilization and barriers. *American Journal of Speech-Language Pathology* 14 (3), 208–220.