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## PROFESSIONAL ISSUES

# Comparing evidence-based practice of nurses and physiotherapists

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### Abstract

**Evidence-based practice has become an ubiquitous concept within nursing. However, there is little comparative data of nursing with other professions on attitudes to evidence-based practice. This article reports on a survey of nurses' and physiotherapists' sources of knowledge and perceived barriers to evidence-based practice within a large teaching hospital. A total of 324 questionnaires were sent to nurses and physiotherapists. The results showed that both physiotherapists and nurses accessed a wide variety of sources of knowledge. However, nurses were more likely to use policy and procedure manuals and discussions with medical staff than physiotherapists. Both professions have problems with overcoming the barrier of time. Nurses were more likely than physiotherapists to rate themselves as having poor evidence-based practice skills.**

This article outlines the results of a survey examining the evidence-based practice (EBP) skills of nurses and physiotherapists working in an acute teaching hospital in the UK. The survey highlights the relative position of nurses, when compared to physiotherapists, in their attitudes and ability to work with an EBP approach.

### BACKGROUND

EBP and evidence-based nursing are terms that have been increasingly discussed within the nursing literature during the last few years. EBP arose as a method of teaching medical students. It sought to promote the:

'...conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients'  
(Sackett *et al*, 1997).

The level to which EBP has become central to the commissioning, organization and delivery of health care is reflected in current UK health policy documents such as *A First Class Service* (Department of Health (DoH), 1998) and *The NHS Plan* (DoH, 2000).

Numerous definitions of EBP have been used and their emphasis has been far-ranging (Jennings and Loan, 2001). Criticisms have also been made, including the allegation that EBP places an over-reliance on medical evidence such as randomized controlled trials and meta-analysis (Clarke, 1999). However, common to all of these approaches to EBP is the requirement that the practitioner identifies a clinically related problem, asks a research question, searches the research literature, and then implements changes on the basis of the evidence available (White, 1997).

One explanation for the adoption of EBP across all of the healthcare professions is that it provides a philosophical basis for providing effective health care within the limited resources available (Colyer and Kamath, 1999). It also moves the emphasis away from basing care on intuition and historical precedents towards underpinning care with research evidence.

Nurses have not fully embraced EBP as a way of working (Hicks, 1997). It has been suggested that, on a macro-level, this is because of the nature of nursing itself. In addition, the bureaucracy within the NHS has been said to have 'conspired' against the nursing profession basing care on best evidence (Hicks, 1998). Further reasons which have been cited include:

- Separation of nursing into clinician, education and research areas (Rafferty, 1992)
- Lack of clinically relevant research (Blanchard, 1996)
- Limitation of nurses' autonomy (Upton, 1999a)
- Lack of research skills (Buss *et al*, 1999), and insufficient time and resources (Nolan *et al*, 1998).

At an individual level, it has been claimed that nurses have problems related to their knowledge, workload, access to resources and power to implement research findings (Hunt, 1981; Le May *et al*, 1998; Upton, 1999b).

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However, these issues are not exclusive to the nursing profession. Research has demonstrated that GPs also have problems related to EBP. Obstacles cited include patient preference, time and EBP skills (McCull et al, 1998; Young and Ward, 2001). There have also been criticisms of surgical research (Horton, 1996) and the 'theory-practice gap' in general practice (Freeman and Sweeney, 2001). Among other allied health professionals barriers suggested in the literature include the ability to understand statistics, time, resources and resistance from medical staff (Metcalf et al, 2001).

When examining reluctance to adopt EBP, there can also be problems with the nature of the evidence itself. Researchers have been accused of not asking questions that are relevant to clinical staff (Upton, 1999b), and there is evidence of a preponderance of preliminary studies (such as pilot studies) compared to definitive studies (such as randomized controlled trials) (Haynes and Haines, 1998). In addition, the sheer volume of available literature can be overwhelming, with over 15 000 biomedical journals published (Grayson, 1997).

Interventions to implement EBP need to be undertaken in a structured fashion (Ciliska et al, 2001). Kitson et al (1998) suggest that successful implementation of research into practice will vary according to the nature of the evidence, the clinical and organizational context and the structures and mechanisms required to facilitate change. Essential requirements for successful implementation of EBP are said to be the organizational infrastructure necessary to coordinate and direct the process (Closs and Cheater, 1994; Le May et al, 1998), and effective facilitation (Kitson et al, 1998).

However, a number of studies have shown that practitioners have a positive attitude towards the concept of evidence-based practice (McSherry, 1997; Nolan et al, 1998; Cranney et al, 2001; Metcalfe et al, 2001).

At a local level, in order to promote and facilitate the adoption of EBP within the nursing and healthcare staff, the trust where the study described in this article was conducted implemented a number of initiatives before the study took place. These included the development of an EBP learning resource pack built around a framework called *Doing the Right Thing Right*, and an action research

project to promote evidence-based assessment of pressure damage risk (Gerrish et al, 1999). More recently, an evidence-based council has been established parallel to the study with representatives from both nursing and healthcare staff. This aimed to involve clinically active staff in developing the capacity and structures necessary to implement EBP in a busy teaching hospital.

The study presented in this article was conducted for two main reasons. The first was that it was part of an evaluation of the evidence-based council to gain a picture of the state of EBP. The second was to provide the trust with information regarding the current capacity of nurses and allied health professionals to engage with trust EBP initiatives. Information was required on the views of staff of their own ability to engage with EBP. The survey would be used to inform the development of existing and new schemes to promote EBP within the hospital.

## AIM

This study aimed to examine the perceptions of nurses and physiotherapists regarding EBP barriers and skills, and to investigate where they currently obtain the information upon which they base their practice.

## METHOD

Approval for the research was obtained from the local research ethics committee. A questionnaire was sent to 223 nurses and 101 physiotherapists working in a large teaching hospital. The questionnaire was designed by Professor Kate Gerrish (reader in evidence-based practice, School of Nursing, University of Sheffield), and Jane Clayton (formerly nursing research fellow, Northern General Hospital, Sheffield), and was based on the Barriers Scale (Funk et al, 1991; Nolan et al, 1998) and the Sources of Knowledge Questionnaire (Estabrooks, 1998). Permission was gained from Kate Gerrish and Jane Clayton to modify the questionnaire.

The questionnaire was modified in such a way as to elicit participants' personal opinions and experiences. Questions were therefore altered from the original Barriers Scale questionnaire form which used 'The nurse does...?', to begin each question with the statement 'I do...'

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The questionnaire was sent to all physiotherapists working in the physiotherapy department ( $n=101$ ). Physiotherapists were chosen as the allied health professionals sample because they were the largest therapy group employed by the hospital. In order to include nurses with a range of experience and expertise the sample comprised all nurs-

es working on a variety of wards ( $n=223$ ). These were surgery, medicine, intensive care and spinal injuries. The wards were chosen in order to gain a cross-section of views from both specialist and generalist areas.

The questionnaires were returned anonymously in a stamped addressed envelope and were colour coded to identify areas and professions. A second repeat mailing was performed as a way of increasing the response rate.

**Table 1. Response rate of questionnaire**

		Returned questionnaires (total sent)	Response rate (%)
Nurses	Surgery	7 (45)	16
	Medicine	13 (112)	12
	Intensive care unit	20 (30)	67
	Spinal injuries	13 (36)	36
	Total	53 (223)	24
Physiotherapists		37 (101)	37
All respondents		90 (324)	28

**Table 2. Grade of respondents**

Grade	Number (%)	
Nurse	D	15 (28)
	E	20 (38)
	F	9 (17)
	G	6 (11)
	Not stated	3 (6)
Physiotherapist	Junior	7 (19)
	Senior 1	15 (41)
	Senior 2	10 (27)
	Superintendent	3 (8)
	Not stated	2 (5)

Nurse sample = 53; physiotherapist sample = 37

**Table 3. Time since qualification**

	All (%)	Nurses (%)	Physiotherapists (%)
Less than 5 years	20	19	22
5-10 years	29	28	30
11-20 years	32	36	27
Over 20 years	11	13	8
Not stated	8	4	13

## STATISTICAL ANALYSIS

Data were entered into the statistical software package SPSS for analysis. The questionnaires were coded on the basis of the three sections: sources of knowledge, barriers and skills.

Scores were calculated from the answers given for the two sections of the questionnaire. The possible range of scores was between -2 and +2, a positive score indicating a more frequently used source of knowledge or greater perceived barrier or greater EBP skill.

Reliability analysis was performed using the Cronbach's alpha test for internal consistency (Cronbach's alpha is a commonly used statistical technique for evaluating the internal consistency of a scale. The technique generates a number between 0 and 1, the more reliable the scale the nearer to 1. Nunnally (1978) indicated 0.7 to be an acceptable reliability coefficient).

Factor analysis was carried out to examine the scales for the different dimensions using the principal component method with varimax rotation. Factor analysis attempts to explain the correlations between the observations in terms of the underlying factors, which are not directly observable.

The Kruskal-Wallis test for non-parametric data was used to test for significant differences between responses from nurses and physiotherapists as the variables we were examining were ranks and scores not following a normal (bell-shaped) distribution.

## RESULTS

The response rate from the physiotherapists and nurses is shown in *Table 1*. The overall response rate was 28%, but when analysed by profession the response from physiotherapy was higher (37% compared to 24% for nurs-

es). There was also variation among the nursing respondents, with medical wards having the lowest response (12%) and intensive care the highest (67%). The nurses and physiotherapists were comparable in terms of spread of grades and years qualified (Tables 2 and 3).

**Sources of knowledge**

The questionnaire asked the respondents about the sources of knowledge used in their practice. They were given 17 possible sources and asked whether they used them in their clinical practice. Table 4 shows the ranks of the top sources of knowledge using the same analysis performed by Estabrooks (1998), with the mean score being derived from never = 1 and always = 5. The sources of information used by the current cohort were similar to those identified by Estabrooks.

Table 5 shows a more detailed comparison of the top sources of information reported by the current study.

The median sources of knowledge scores are shown in Figure 1. Information from the client and personal experience were among the greatest sources of knowledge, with the internet the least used. Figures 2 and 3 show a breakdown of the sources of knowledge in terms of the percentage of respondents who never/seldom, sometimes or always/frequently used a specific source.

Figure 3 shows that nurses were more likely than physiotherapists to use their intuition, policy and procedure manuals and medical staff as sources of information.

Knowledge from the internet was among those least used (see Table 5). Over 60% of both nurse and physiotherapy respondents did not use the internet as a source of information. Closer examination of the responses revealed that there were variations for nurses in the use of the internet by grade and number of years qualified. For nurses, D and G grades were least likely grades to use the internet, with 80% of D grades and 70% of G grades never or seldom using the internet. For those qualified over 20 years, 100% never or seldom used the internet. A similar finding was seen with physiotherapists; the junior grades (69%), senior 1 (64%) and superintendent grades (67%) were the least likely to use the internet.

A comparison of sources of information scores showed a median score of +2 (i.e. always) for both nurses and physiotherapists for information obtained from the client. A

**Table 4. Ranked sources of information**

Rank		Mean	Estabrooks
1	Information from the client	4.51	4.3
2	Personal experience	4.06	4.1
3	Information from fellow practitioners	3.76	3.8
4	Information from inservice training/conferences	3.75	3.6 (ranked 6th)
5	Information learned during training	3.56	3.8 (ranked 4th)
<b>Bottom five sources of knowledge</b>			
14	From new treatments/medication prescribed by medical staff	2.94	
15	What has always worked	2.89	
16	How I have always done it	2.42	3.5
17	Information from the internet	2.20	N/A
18	Information from the media	1.89	2.4

median score of -2 (i.e. never) was obtained for both professions for information from the media and the internet.

In addition, when comparing the sources of knowledge accessed on a frequent basis (i.e. median score of +1), physiotherapists and nurses both accessed a wide range of sources. Physiotherapists cited the use of personal experience, fellow practitioners, inservice training and professional journals and text books. This was similar to nurses who also reported accessing personal experience, fellow practitioners, medical staff and inservice training.

Nurses were more likely than physiotherapists to use discussions with medical staff ( $P < 0.001$ ) and policy and procedure manuals ( $P < 0.01$ ) to obtain information to use in their practice. Reliability analysis yielded a Cronbach's alpha of 0.72, suggesting good internal consistency for this section of the questionnaire.

**Perceived barriers to EBP**

The perceived barrier section of the questionnaire was split into two parts. The first section asked the respondents' views on issues related to the organization, resources and colleagues. The second section concentrated on the respondents' skills in EBP.

The factor that provided the greatest perceived barrier for both nurses and physio-

**Table 5. Comparison for top five sources of information**

Rank	Question	Mean score		Standard deviation		Median	
		Nurse	Physio	Nurse	Physio	Nurse	Physio
1	From each client as an individual	4.4	4.7	0.7	0.6	5	5
2	Personal experience	4.1	4.1	0.8	0.7	4	4
3	Fellow practitioners	3.7	3.8	0.6	0.5	4	4
4	Inservice training	3.7	3.8 (R = 5th)	0.8	0.9	4	4
5	Policy and procedure manuals	3.5	3.5 (R = 8th)	1.0	1.0	4	4
14	What has worked for me for years	2.8	3.1 (R = 15th)	0.8	1.0	3	3
15	New therapies/prescriptions that I learn about	2.8	3.2 (R = 13th)	1.0	1.1	3	3
16	The way I have always done it	2.3	2.6	0.8	1.1	2	3
17	Internet	2.1	2.3	1.0	1.0	2	2
18	Media	1.8	2.0	0.7	0.5	2	2

(1 = never and 5 = always), R = ranked, Physio = physiotherapist

therapists was insufficient time to find information, with 73% of all respondents reporting this as a barrier. The least cited barrier was the culture of the ward. Medical staff were seen as sometimes being a barrier by 50% of the nurses who responded (Table 6).

The Kruskal-Wallis test showed that nurses were more likely than physiotherapists to report 'insufficient resources to change practice' ( $P < 0.01$ ) and 'research reports were not available' ( $P < 0.05$ ) as barriers.

The aggregate barrier scale was calculated for each of the first part of the barriers section, with 2 being 'agree strongly' and -2 being 'disagree strongly'. The median scores showed that physiotherapists considered time, colleagues and managers to be barriers, compared to nurses who perceived time and managers as being the major barriers.

The Cronbach's alpha score for the first barriers section of the questionnaire was 0.77 and the second section 0.92, suggesting high internal consistency.

When examining skills in EBP, nurses were more likely than physiotherapists to rate themselves as novices in terms of finding, reviewing and using research evidence. Comparison of the median scores for the skills section of the questionnaire showed that physiotherapists rate themselves as less skilled (i.e. negative score) when concerned with finding and reviewing organizational information. However, nurses had a negative score for finding, reviewing and using research information.

Factor analysis was carried out to identify the contribution of the different components within the scales. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.78 and so being greater than 0.5 it was satisfactory for factor analysis to be performed. The factors that accounted for 48% of the variation in the original 24 variables were skills in EBP and understanding the evidence.

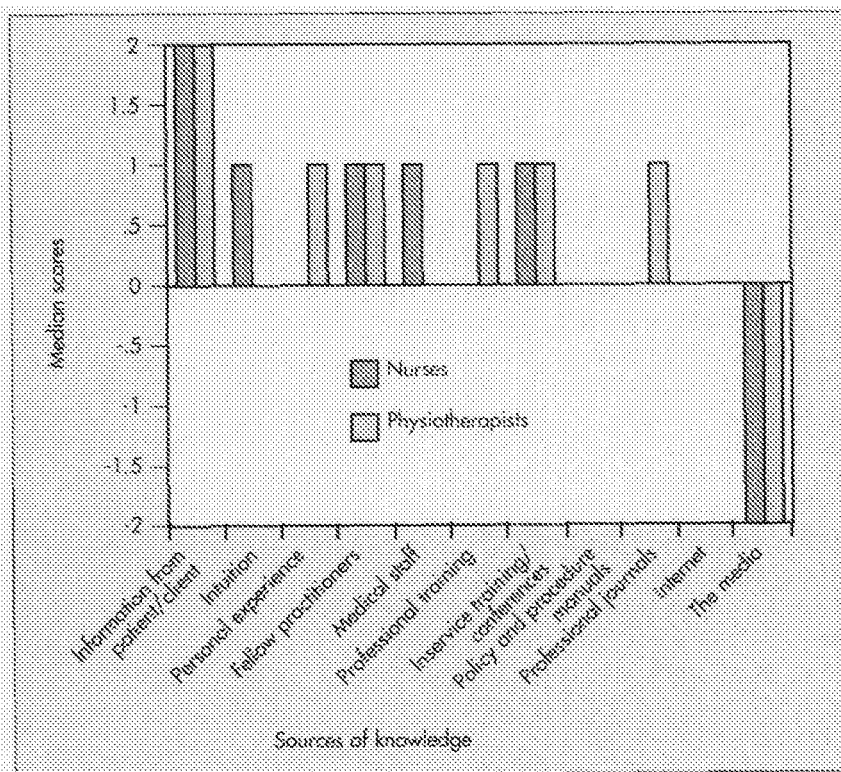


Figure 1. Median score for sources of knowledge.

## DISCUSSION

The response rate (see Table 1) was rather disappointing but was comparable with other studies in nursing related to EBP and research usage. A study undertaken by Closs et al (2000) achieved a response rate of 36%. Another study which had also been conducted in the same hospital as the current research achieved a response rate of 27% (Nolan et al,

