

## Research paper

# Are therapists working in chronic pain evidence based? It seemed a simple question at the time ...

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### ABSTRACT

Awareness is strong that it is no longer adequate to provide healthcare grounded exclusively on clinical experience without a clear demonstration of a high-quality research evidence base. Evaluation of how successfully we are in achieving this goal is a priority across all healthcare disciplines. This paper explores whether therapists are evidence based in their beliefs about pain treatment, and presents a structured review of the evidence base for certain chronic pain interventions. The study used secondary data from a larger study to compare what therapists in the UK endorsed as important treatments for chronic pain against the current evidence obtained from published systematic reviews. The study revealed that therapists had widely diverse endorsement patterns that seemed evidence based for certain treatments but not for others. This is consistent with recent literature stressing that not all health issues can be dealt with through simple cause-and-effect equations,

and that the evidence base for best practice must be explored with an awareness of the complex inter-relationships of dynamic political, social and cultural environments. The range of treatment beliefs seen in this study could be taken as support that therapists are, either tacitly or overtly, aware of the need to seek evidence for treatment effectiveness within a wider scope than that traditionally offered by the biomedical model. Complex adaptive systems theory may offer insight and guidance about ways to work with this diversity of practice in a positive manner that seeks to use conflicting opinions as a generative force for creative problem solving and contextually reflective intervention. The findings served to provoke many questions that should be more carefully scrutinised before any conclusions about evidence-based practice are drawn.

**Keywords:** chronic pain, complexity, evidence base

## Introduction

Healthcare practice is changing, and the foundations of the paradigm shift lie in research developments over the last four decades. It is no longer adequate to provide healthcare grounded exclusively in clinical experience, without a clear demonstration of a high-quality research evidence base. Evidence-based practice (EBP) is the product of combining research evidence with clinical knowledge and reasoning, professional judgement and knowledge of patient characteristics (Law and Baum, 1998). EBP evolved from evidence-

based medicine and now embraces the delivery of all healthcare services. Sackett *et al* (1996) described evidence-based medicine as ‘integrating clinical expertise with the best available external clinical evidence from systematic research’ (p. 71).

The movement towards EBP in the health service is an issue that the present government of the UK has highlighted in NHS reforms (NHS, 1997). Underpinning EBP is the need to provide relevant training for healthcare professionals enabling them to read and

assimilate the evidence which is provided in the literature, in order to make informed decisions about their practice (Barnard and Wiles, 2001). To maintain clinical effectiveness, all healthcare professionals should engage in regular internal and external training programmes to add to existing clinical skills, and to offer scope for personal and professional development (Dunning, 1995). However, this ongoing training is not always evident, and there seem to be a number of barriers to this process. With the condition of low back pain, for example, physiotherapists tend to explore their own personal training agendas, which leads to a fragmented approach in relation to the condition (Foster *et al*, 1999). Additionally, research has found that most occupational therapists have very little undergraduate knowledge of pain-related issues (see for example Turnquist and Engel, 1994; Unrah, 1995; Rochman, 1998; Rochman and Herbert, 1999; Strong *et al*, 1999), and that also affects their readiness to work with people who have chronic pain.

The process of change within clinical practice is a fascinating area and rigorous, theory-driven research of the area is still in its infancy. Some healthcare professionals are slow to adopt clinical practice based on scientific findings. Reasons include difficulties accessing research literature (Dubouloz *et al*, 1999; Barnard and Wiles, 2001), lack of time or knowledge required to search for, read, interpret and evaluate relevant reports (Pollock, 2000; Gervais *et al*, 2002; McCluskey, 2003), the belief that experience and expert opinion are more important for competency than knowing the results of research (Belanger, 1997), failure to recognise the existence of guidelines based on evidence, and institutional barriers to changing current practice (Funk *et al*, 1995). More alarmingly, EBP is seen by some clinicians as a potential threat to the routine ways of analysing and carrying out therapeutic interventions (Dubouloz *et al*, 1999). Some physiotherapy clinicians believe that they solve clinical problems in practical ways, and find it difficult to let go of the core skills that they perceive as their domain, and change from current practice to EBP (Pinnington, 2001). It has also been reported that clinicians find the 'current style of research articles unhelpful and unreadable with recommendations few of them are realistically able to work with let alone understand' (Mimms, 1996, p. 394).

For certain clinical conditions the literature is diverse, extensive and, at times, contradictory. When this happens the problem of accessing and evaluating the 'evidence' is compounded and presents a further barrier. An example of this is chronic pain, and particularly low back pain, a clinical condition frequently encountered by therapists. Because of its multifaceted presentation, many therapeutic approaches are used in the management of chronic low back pain. Some appear to be effective and some do not. Distinct treatment approaches tend to target specific effects

and outcomes. Manual therapy (mobilisation and/or manipulation), for example, has been shown to be effective in reducing pain levels (Andersson *et al*, 1999), and specific exercise programmes have been shown to be effective in reducing disability and increasing performance (Klaber Moffett *et al*, 2000). However, these approaches fail to directly address the psychosocial aspects of chronic pain that are felt to be very significant barriers to improvement.

An additional feature of chronic pain contributing to the diversity of practice is the current preference for a multidisciplinary team approach. Over the last decade, there has been a significant move to manage patients with chronic pain more actively and intensively in multidisciplinary programmes (Frost, 1997). Although the efficacy of this approach is widely supported, there is significant variation in content from one programme to another, creating a challenge to the researcher in being able to isolate the strength of the evidence for individual treatment components.

As Meijers *et al* (2006, p. 632) point out, 'implementing change, getting research into practice and improving the quality of patient care are complex, difficult, and demanding processes'. One of these processes must be to identify key areas that are currently under-researched, so that resources and energy are focused where most needed. Chronic pain, because it is a feature of so many chronic conditions, is such an area for rehabilitation therapists.

## Study aims and rationale

Delivering effective, evidence-based service is imperative for therapists because of the large human and economic cost of chronic pain. Chronic pain is recognised as a significant problem within the industrialised nations, and prevalence has been cited in European and North American studies as between 12% and 35% of the population at any one time, and 49–80% across the life span (Elliott *et al*, 1999; Maniadakis and Gray, 2000). Research into the cost of illness arising from back pain estimated the direct care costs in 1998 as £1632 million. Including additional indirect costs, such as carers and lost wages, the figure rose to £10 668 million (Maniadakis and Gray, 2000). The World Health Organization (WHO, 2002) reports that chronic conditions like pain are increasing at an alarming rate and will compose 60% of the global disease burden by the year 2020. WHO stresses that effective management of these conditions will require a paradigm shift within both healthcare structures and service providers. The question is to what extent therapists have accurate information about chronic pain interventions and what areas need attention to allow that paradigm shift to occur? The aim of this study is to provide a structured review of the evidence

base for certain chronic pain interventions, and to then determine to what extent occupational therapists' and physiotherapists' beliefs about these treatments are grounded in this evidence. The findings are discussed in relation to the current professional literature pertaining to EBP, and will conclude with recommendations for further study.

## Methods

This study used existing survey data about the beliefs held by occupational therapists and physiotherapists regarding treatments for chronic pain. The therapists' endorsements were examined in relation to the existing evidence base for chronic pain treatments, as itemised in a range of systematic reviews, to determine whether therapists' endorsements reflect the findings of these reviews.

### Therapists' endorsements

Two sources of secondary data were accessed in order to compare therapists' endorsement patterns in relation to the evidence base for chronic pain treatments. The first, occupational therapist and physiotherapist beliefs about what treatment components for chronic pain are important, was extracted from a larger multidisciplinary study (Brown, 2003) that examined service provider and service user congruence of beliefs regarding treatments for chronic pain. In Brown's study, participants were surveyed to identify which treatment components they personally endorsed as important or not important for people with chronic pain. The survey also gathered basic demographic data regarding age, gender, experience and training specific to chronic pain. Beliefs about pain control were identified using the Beliefs about Pain Control Questionnaire (BPCQ; Skevington, 1990), and these findings are reported elsewhere (Brown, 2003).

### Source of evidence for treatment effectiveness

The second item required for the comparison was an overview of the existing evidence base for chronic pain treatments. Again, secondary data were accessed through a search for systematic reviews related to specific treatments for chronic pain. The Health Technology Assessment (HTA) report, *Systematic Review of Outpatient Service for Chronic Pain Control* (McQuay *et al*, 1997), served as a starting point to identify treatment components for chronic pain where the evidence base had been systematically reviewed. Electronic databases were also reviewed for the period

between the HTA publication and October 2002 when therapists' opinions about which treatments were important were surveyed. Databases included AMED, CINAHL and Medline. Search terms with variations specific to the particular database included combinations of *professional practice*, *evidence base*, *systematic review*, *occupational therapy*, *physiotherapy* and *physical therapy*. *Chronic pain* was not initially included as a search term, as certain treatment components may also be employed in other painful conditions. It was thought that it would be useful to know what studies on each treatment component had been carried out regardless of diagnostic group. *Occupational therapy*, *physiotherapy* and *physical therapy* were used as search terms based on the assumption that therapists attend to information within the discipline-specific literature first.

The search, limited to English language publications, retrieved seven hits relevant to the treatment components identified in the survey. None of these reviews were generalised to chronic pain overall. However, they did focus on conditions where pain of a chronic nature is a primary feature. These conditions included fibromyalgia (Hadhazy *et al*, 2000), osteoarthritis (Osiri *et al*, 2000), low back pain (van Tulder *et al*, 2000b,c), shoulder pain (Green *et al*, 2000) and neck pain (White and Ernst, 1999).

To ensure comprehensiveness of the review a further search was made on PsychInfo, IBSS and Medline (between 1996 and 2002, English language only) with the more general search terms of *chronic pain* and *systematic review*. Seventeen additional hits were identified after the duplicate references from the previous searches were screened. These systematic reviews included TENS (transcutaneous electrical nerve stimulation) for people with phantom limb (Halbert *et al*, 2002), low back (Milne *et al*, 2001) and headache pain (Vernon *et al*, 1999), gabapentin (anticonvulsant medication) in neuropathic conditions (Mellegers *et al*, 2001), multidisciplinary service delivery (Guzman *et al*, 2001; Thomsen *et al*, 2001), homeopathy for headache (Ernst, 1999b; Vernon *et al*, 1999), exercise for a variety of pain sites (Mior, 2001), acupuncture (Ezzo *et al*, 2000; Henderson, 2002), relaxation (Carroll and Seers, 1998), topical non-steroidal creams (Moore *et al*, 1998), and antidepressants (McQuay *et al*, 1996).

Lastly, the *British Medical Journal (BMJ)* electronic journal *Clinical Evidence* was searched for pain interventions of interest within the musculoskeletal category. The reviews of relevance to this paper included interventions for shoulder pain (Speed and Hazleman, 2002), educational materials (Superio-Cabuslay *et al*, 1996), exercise, non-steroidal anti-inflammatories and topical agents (Chard *et al*, 2002; Gotzsche, 2002; Scott *et al*, 2002). Table 1 lists the 14 treatments for which systematic reviews were obtained.

**Table 1** Evidence and endorsement patterns

Treatment component	Shown to be effective	Lacks evidence	Occupational therapist endorsement, n (%)	Physio-therapist endorsement, n (%)	Statistical difference (probability) <sup>a</sup>	Non-response rate (%)
Multi-disciplinary team	McQuay <i>et al.</i> , 1997; Guzman <i>et al.</i> , 2001	Thomsen <i>et al.</i> , 2001; Speed and Hazleman 2002 – shoulder pain	51 (98.1)	31 (88.6)		PT – 11.4
Topical NSAIDs	McQuay <i>et al.</i> , 1997; Halbert <i>et al.</i> , 2002; Scott <i>et al.</i> , 2002	Green <i>et al.</i> , 2000; Gotzsche, 2002	19 (36.5)	21 (60.0)	0.034	OT – 25 PT – 25.7
Capsaicin cream	McQuay <i>et al.</i> , 1997; Chard <i>et al.</i> , 2002		14 (26.9)	18 (51.4)	0.027	OT – 25 PT – 34.3
Antidepressants	McQuay <i>et al.</i> , 1996, 1997		21 (40.4)	23 (65.7)	0.012	OT – 19.2 PT – 22.9
Physiotherapy	Chard <i>et al.</i> , 2002; Scott <i>et al.</i> , 2002 – osteoarthritis, hip and knee	Green <i>et al.</i> , 2000 – shoulder pain	51 (98.1)	33 (94.3)		
Relaxation		McQuay <i>et al.</i> , 1997	51 (89.1)	31 (88.6)		PT – 11.4
Exercise/conditioning	Scott <i>et al.</i> , 2002	van Tulder <i>et al.</i> , 2000a; Speed and Hazleman, 2002 – shoulder pain	45 (86.5)	31 (88.6)		OT – 9.6 PT – 11.4
TENS	Vernon <i>et al.</i> , 1999 – headache; Osiri <i>et al.</i> , 2000 – osteoarthritis, knee; Halbert <i>et al.</i> , 2002 – phantom limb pain	McQuay <i>et al.</i> , 1997; Milne <i>et al.</i> , 2001	25 (48.0)	26 (74.3)		OT – 3.8 PT – 17.1
Anticonvulsants	Mellegers <i>et al.</i> , 2001	McQuay <i>et al.</i> , 1997; Wiffen <i>et al.</i> , 2000	16 (30.8)	23 (65.7)	0.001	OT – 25.0 PT – 25.7
Acupuncture		Vernon <i>et al.</i> , 1999 – headache; White and Ernst, 1999; Ezzo <i>et al.</i> , 2000; Henderson, 2002; van Tulder and Koes, 2002	23 (44.2)	22 (62.9)		OT – 5.8 PT – 14.3
Homeopathy		Ernst, 1999a; Vernon <i>et al.</i> , 1999 – headache	11 (21.2)	8 (22.9)		OT – 5.8 PT – 14.3
Education	Superio-Cabuslay <i>et al.</i> , 1996 – osteoarthritis and rheumatoid arthritis	Chard <i>et al.</i> , 2002; Scott <i>et al.</i> , 2002	51 (98.1)	31 (88.6)		PT – 11.4
Biofeedback		van Tulder and Koes, 2002	21 (40.4)	17 (48.6)		OT – 9.6 PT – 11.4
Massage	van Tulder and Koes, 2002	Vernon <i>et al.</i> , 1999 – headache	15 (28.8)	7 (20.0)		OT – 5.8 PT – 17.1

<sup>a</sup> Difference between occupational therapists and physiotherapists; Pearson's chi-square, SPSS version 10. NSAID, non-steroidal anti-inflammatory drug; OT, occupational therapist; PT, physiotherapist; TENS, transcutaneous electrical nerve stimulation.

## Psychological interventions

The Health Technology Assessment carried out by McQuay *et al* (1997) also attempted to review the evidence related to components of psychological approaches such as self-management education, goal setting, problem solving, family involvement and coping skills groups. However, because of the small number of high-calibre studies and the lack of comparability, they were unable to draw conclusions. A subsequent systematic review (Morley *et al*, 1999) found that there was sufficient evidence to conclude that active psychological treatments based on the principles of cognitive-behavioural therapy are effective interventions compared to waiting list controls. However they, like McQuay *et al*, were unable to comment on specific treatment components delivered within highly variable and complex treatment designs. They stressed the importance of simple two-arm trials for future research considerations. The search strategy outlined previously identified additional systematic reviews covering a range of cognitive-behavioural, psychological and behavioural interventions for people with chronic pain (Eccleston *et al*, 2002; Morley *et al*, 1999; van Tulder *et al*, 2000b). However, the same problem with being unable to isolate individual components of psychological interventions was identified by the authors of this paper. The occupational therapists and physiotherapists in this study had been asked to comment on specific treatment components such as assertiveness training and art therapy, as opposed to the more generic category of psychosocial interventions. So as

to avoid misinterpreting and misrepresenting participants' treatment endorsements, it was decided to exclude these treatment components from the present discussion.

## Results

### Therapists' profile and endorsements

Sixty-two physiotherapists who were members of the Pain Society-UK and 93 occupational therapists who were members of the Pain Society and/or the National Occupational Therapy Pain Association-UK received a survey in the original study carried out by Brown (2003). The response rate was 52 (55.9%) occupational therapists and 35 (56.4%) physiotherapists, with a demographic breakdown as illustrated in Table 2. No statistically significant differences were found between occupational therapists and physiotherapists for age, amount of undergraduate training and hours of CPD related to chronic pain. The physiotherapy respondents showed statistically significant differences, identified through independent samples *t* test calculated with SPSS version 10, from the occupational therapists in both having a higher number of male respondents ( $P = 0.026$ ) and number of years in practice ( $P = 0.004$ ).

These British occupational therapy and physiotherapy respondents had a wide range in hours of undergraduate training, with 68.5% reporting that

**Table 2** Participant demographics

	Mean age (years)	Sex, <i>n</i> (%)	Years in practice (mean)	Hours of pre-qualification training specific to pain (mean)	>30 h pain CPD, <i>n</i> (%)
Occupational therapists ( <i>n</i> = 52)	41.10	F = 48 (92.3); M = 4 (7.7)	14.35	2.6	36/51 (70.6)
Physiotherapists ( <i>n</i> = 35)	44.14	F = 23 (71.9); M = 9 (28.1); missing = 3	19.51	3.14	32/33 (96.9)
Combined occupational therapists and physiotherapists	42.32	F = 71 (81.6); M = 13 (14.9)	16.43	2.75	68/87 (78.2)
Statistical significance <sup>a</sup>		$P = 0.026$	$P = 0.004$	NS	$P = 0.003$

<sup>a</sup> Independent sample *t* test between occupational therapists and physiotherapists. NS, not significant.

they had received no training in pain and pain management. Only four (5.5%) of the total group had received more than 20 hours of pain education at undergraduate level. This finding is consistent with other studies, where very low amounts of undergraduate preparation for dealing with chronic pain were identified (Unrah, 1995; Rochman, 1998; Strong, *et al*, 1999). Interestingly, in contrast, only three therapists (3.6%) reported having no additional CPD training in pain management, whereas 68 (78.2%) had participated in over 30 hours of pain-related CPD.

The returned surveys were entered into SPSS Version 10 for descriptive statistical analysis. Because the participants, through their membership in organisations specialising in pain, were assumed to have higher levels of knowledge than a general therapist, the option of *undecided* was not available on the survey. For certain treatment components the non-response rate was high and needed to be taken into consideration in statistical analysis. Where no selection was made between *important* or *not important*, an entry of *non-response* was made in the database. Complete details of endorsements are published elsewhere (Brown, 2003).

## The evidence base for chronic pain treatments

When the available evidence for specific treatment components was reviewed, capsaicin cream and antidepressants were identified as treatments shown to be effective through the systematic review process. The systematic reviews of eight other treatment components had mixed findings. Some concluded that the treatment was effective; others determined that there was a lack of evidence. These eight treatments include multidisciplinary teams, topical non-steroidal anti-inflammatory drugs (NSAIDs), physiotherapy in certain painful conditions, exercise/reconditioning activities, TENS, anticonvulsant medication, and pain education. Lastly, systematic reviews of the final four treatment components (relaxation, acupuncture, homeopathy and biofeedback) were found to lack an evidence base. None of the 14 treatment component reviews concluded that the treatment was shown to be not effective (Table 1).

## Comparing therapists' endorsements to the evidence base

This paper's aim was to identify whether therapists were evidence based in their endorsements for chronic pain treatments. The findings are presented in Table 1, comparing the two sources of secondary data discussed above. Table 1 demonstrates whether a treatment has been shown to be effective or if it lacks evidence, and the percentage of therapists who endorsed

each particular treatment. The second to last column indicates any statistically significant difference (based on Pearson's chi-square) in the endorsement patterns of occupational therapists and physiotherapists. The final column shows the percentage of therapists who failed to identify if they thought the treatment was either *important* or *not important*.

A review of Table 1 indicates that both physiotherapists and occupational therapists were evidence based in their endorsements of the *multidisciplinary team*, *physiotherapy intervention*, *exercise/conditioning programmes* and the *provision of education about pain*. It also appears that therapists were either not aware or did not accept that *topical NSAIDs*, *capsaicin cream*, *antidepressants*, *TENS* and *anticonvulsants* have been demonstrated to be effective interventions. Neither occupational therapists nor physiotherapists endorsed the use of *acupuncture*, *homeopathy* and *biofeedback*. This is consistent with the lack of evidence for these interventions. However, therapists did quite strongly endorse the treatment option of *relaxation training*, despite a lack of evidence for its effectiveness.

As illustrated in Table 1, physiotherapists and occupational therapists had statistically significant differences in their endorsement for certain treatment components. Cross-tabulation (based on Pearson's chi-square) of occupational therapists' and physiotherapists' endorsements for the three possible groupings (*important*, *not important*, *non-response*) highlighted statistically significant difference in beliefs about the importance of topical NSAIDs ( $P = 0.034$ ), capsaicin cream ( $P = 0.027$ ), antidepressants ( $P = 0.012$ ) and anticonvulsants ( $P = 0.001$ ). Physiotherapists, as opposed to occupational therapists, were more likely to select all of these treatment components as important.

## Discussion and conclusions

### Limitations

The study is limited by the use of secondary data from a study not originally intended to provide a comprehensive systematic review of the evidence base for interventions employed by therapists. Consequently there are some interventions missing from the review. Also the original endorsement data were gathered several years prior to the review of the strength of the evidence for these interventions, so it should be assumed that the literature now might reflect different strength ratings for certain interventions. These are all reflective of how rapidly the information we all attempt to base best practice upon can shift and reconfigure. Also, the endorsement data were extracted from a study with a small sample size and an inability to determine demographic characteristics that may have

influenced participation in the study. The respondents, because of their membership in the Pain Society, should be viewed as a subspecialist group that may have a wider knowledge and experience base in chronic pain than other therapists. Survey data do not capture the full range of responses possible in exploring a complex area such as pain, and it is possible that the treatment components were not defined in sufficient detail for some respondents and so assumptions about a common meaning for some components cannot be made. This postal survey focused on *what* therapists endorsed, and so provided predominantly quantitative data. As such, survey data are limited by both researcher and respondent bias (Bowling, 1997) and offer a limited range of information where the individual voice can be lost in the aggregation of many voices. The importance of exploring what values and meanings the individual holds is reinforced by the increasing focus on qualitative research methods in highly regarded medical publications like the *BMJ* (Mays and Pope, 1999, 2000). The findings reported in this paper should be seen as a bridge into the more specific examination of ‘*why*’ and not as definitive in themselves. The second stage of this research is currently being carried out and involves a Delphi process in which both service users and service providers explore what influences their decision making about treatment importance, and also reflect on each other’s opinions, beliefs and recommendations.

### It seemed a simple question at the time

The aim of this paper was to raise awareness of an under-researched area through identifying whether therapists were evidence based in their beliefs about chronic pain treatments. ‘*It seemed a simple question at the time.*’ However, the findings seem to raise more questions than they answer. Why do therapists not endorse some treatments despite a demonstrated evidence base? Why do they continue to believe in the importance of certain treatments that lack an evidence base? Why are physiotherapists and occupational therapists different in their endorsements, and why do some therapists, despite membership in pain specialist organisations, express no opinion about certain treatments? Some possible influences are explored in the following section.

### Why are therapists not consistently evidence based?

It is reassuring to discover that both physiotherapists and occupational therapists readily endorse a multidisciplinary format in the management of chronic pain. The use of such a format to manage patients,

where different professions bring individual skills to patients with chronic pain, has been well recognised among many for at least a decade. This format is well supported in the literature (McQuay *et al*, 1997; Guzman *et al*, 2001).

Anecdotal evidence, however, suggests that many therapists not specialised in the management of chronic pain continue to manage their patients with chronic pain individually, in a non-multidisciplinary setting. Reasons for this might include constraints in funding and resources; there simply may not be enough multidisciplinary programmes in existence.

Similarly, the treatment techniques that are traditionally associated with multidisciplinary pain programmes – physiotherapy, exercise and conditioning programmes – and education about pain processes and their effect on the body are all well endorsed by both therapies, and are all supported to some extent in the literature (Superio-Cabuslay *et al*, 1996; Chard *et al*, 2002; Scott *et al*, 2002). Conversely, relaxation techniques are also traditionally associated with chronic pain management and were well endorsed by both therapies in this survey, but the evidence to support their use is lacking to date (McQuay *et al*, 1997). Acupuncture, although less well endorsed by both therapies than relaxation, is still seen to be an important treatment for chronic pain by more than one-third of physiotherapists despite a distinct lack of evidence (White and Ernst, 1999; Ezzo *et al*, 2000).

This survey also highlighted some treatment components for chronic pain that have varying degrees of support in the literature, but are poorly endorsed by the therapies. Topical NSAIDs (Halbert *et al*, 2002), capsaicin cream (Chard *et al*, 2002), anticonvulsants (Mellegers *et al*, 2001) and antidepressants (McQuay *et al*, 1997) have all been shown to be effective treatments for chronic pain. Despite the evidence, only 36% of occupational therapists and 60% of physiotherapists support the use of topical NSAIDs, 27% and 51% respectively support the use of capsaicin cream, 31% and 66% respectively support the use of anticonvulsants, and 40% and 65% respectively support the use of antidepressants. These results suggest that a significant number of physiotherapists and occupational therapists don’t see a role for these treatment components in chronic pain, but might also reflect the possibility that they do not view these treatment components as within their routine remit. It is interesting that physiotherapists endorsed the use of these particular components far more often than their occupational therapy colleagues, reaching statistical significance for each component. This trend suggests that physiotherapists more strongly endorse biomedical and medication-related treatment components, while occupational therapists appear to adopt an approach based on ‘self-management’.

We must acknowledge that all treatments are social constructs of individual therapists. The decision to use a particular treatment or not is, to a large degree, based on historical developments of the individual's belief in their efficacy as opposed to any 'evidence', particularly when the evidence is simply not available (lacking). Decision making regarding treatment selection is governed by what therapists are taught, what they are told, what they observe and perhaps what employers expect them or tell them to do. The high endorsement of relaxation, for example, may be influenced by factors such as the technique being taught during training as an important and beneficial treatment for pain, by individuals observing it as a commonly administered treatment during clinical practice, by it being perceived as a 'low-risk', non-invasive treatment that therapists biomedicalise to justify its use, and by it fitting nicely within the patient's perceptions of their needs.

We must also recognise the difficulty in convincing practitioners that sound, high-quality research findings cannot be logically or ethically rejected because they do not fit with their opinions, beliefs or experiences. This is referred to as the *research-practice gap*, and solutions to this dilemma have proposed that practitioners become more aware of the judgemental origin of their practice to enable them to more readily introduce research findings, and that researchers communicate their research results in a way that makes them directly relevant to the decision-making process of practitioners (Alsop, 1997). Although therapists have embraced the need for evidence in shaping practice, they are becoming increasingly sceptical of the value of 'gold standard' research. Contemporary theorists now stress that while evidence arises from studying causality and probability, it also comes from an equally important examination of patterns and possibilities (Tickle-Degnen and Bedell, 2003). Large-scale randomised controlled trials (RCTs) are seen as flawed in their attempt to identify a pre-specified and invariable treatment for every patient (*that can't be physiotherapy surely?*). Cox (1999) reminds us that, with respect to RCTs as best evidence for the therapies, 'scientific method focuses on one variable at a time across a hundred identical animals to extract a single, generalisable proof ... Clinical practice deals with a hundred variables at a time within one animal in order to optimise a mix of outcomes intended to satisfy the particular animal's current needs and desires'.

## Dealing with a hundred variables at a time

The World Health Organization's caution that many issues in healthcare, such as chronic illness conditions, require an awareness of the complex interrelationships between the person, society and the environment

(WHO, 2002) is particularly pertinent in this study. Examining the contextually diverse nature of chronic pain treatment seems to have served to raise more questions than it has answered, and this is a strong indication that our reductionist linear approach using a questionnaire was ineffective to address such a complex question. Therapy literature is beginning to explore these relationships between practice and theory, and suggests that therapists' decision making is multidimensional, and that the evidence base as defined by RCTs is only one in a wide range of influences. Physiotherapists and occupational therapists are also increasingly concerned with patient choice (Rogers, 2002), becoming more aware that the research constituting the scientific evidence base is not always defined by outcomes of relevance or importance to patients (Davies and Nutley, 1999). Upton (1999) proposes that nurses are slow to take up the evidence base generated through RCTs because they perceive a gap between this positivist approach to healthcare and their professional ethos of holism. She further suggests that new methods of generating 'evidence' need to be developed before certain practices change. This proposal seems relevant to therapists, given the strong integration of patient-centred care within the two professions. Rappolt (2003) offers an excellent argument for the need to see evidence as emerging from the interaction between research, professional experience and the individual client.

The recent *BMJ* series on complexity and healthcare has clearly illustrated that health and service provision can no longer be relegated to simple cause and effect equations (Fraser and Greenhalgh, 2001; Plsek and Wilson, 2001; Wilson *et al*, 2001). Rather, services must be provided with flexibility and within an awareness of the dynamic interrelationships of political, social and cultural environments experienced by service users. The varied endorsement patterns seen in this study could be taken as support that therapists are, either tacitly or overtly, aware of this need to derive the evidence base for practice from a wider range of sources than the traditional RCT. The director of the NHS Modernisation Agency, David Fillingham, stated that 'the NHS is the epitome of a complex adaptive system. Such systems do not always respond well to mechanistic formulae' (Fillingham, 2002). The Department of Health (NHS, 2003) report, *Achieving Real Improvement for the Benefit of Patients: NHS Modernisation Agenda Annual Report 2002/2003*, went on to highlight the importance of shifting the locus of control to the local level and developing partnerships between service providers and patients, to ensure outcomes are relevant within the context of patients' lives and occupational demands.

Occupational therapists and physiotherapists have much to offer in promoting healthcare that encompasses whole people as opposed to randomised

participants in a controlled trial. The theory of complex adaptive systems as it applies to healthcare may be a significant tool in understanding how service providers view treatment for chronic pain and in determining what the evidence base is in relation to the services of occupational and physiotherapists.

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#### CONFLICTS OF INTEREST

None.

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