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THE IMPORTANCE OF EVIDENCE-BASED PRACTICE

Without doubt the evidence-based practice drive has had a significant positive impact on our profession. While the search for physiotherapy evidence is not something new, the quality of physiotherapy research has never been scrutinised to the extent it is today with the positive effect of a steady increase in the quality of physiotherapy research (Maher, 2003). We must embrace evidence-based practice, as history reports that without the critical appraisal evidence-based practice demands, misconceptions in clinical theory and practice are allowed to continue unchecked (Kuhn, 1962). Humans are subject to unrecognised bias and errors of logic that necessitate audits of practice as encouraged by the evidence-based movement.

However, as essential as evidence-based practice is to the growth of our profession, a somewhat narrow conception of what constitutes evidence-based practice and what constitutes acceptable evidence, is creating a number of 'Imbalances' in the outcomes of our research. In this paper I draw attention to imbalances in research methodologies, methods of psychosocial data collection and details provided in research reports. I then emphasise the importance of clinical expertise and experience-based evidence to applying research-based evidence in practice and lastly, I highlight the need for more overt strategies to facilitate change in practice behaviour as our evidence-base continues to grow.

BALANCING RESEARCH METHODOLOGIES USED TO INFORM EVIDENCE-BASED PRACTICE

The dominant research paradigm driving the evidence-based practice movement is without doubt the quantitative paradigm and the dominant research strategy valued in evidence-based practice is the randomised controlled trial (RCT) used to investigate the effectiveness of therapeutic interventions. This is perhaps most evident in the 'Levels of Evidence' hierarchy recommended by Sackett et al. (2000) for ranking the quality of information available to guide practice. While Sackett and colleagues now acknowledge the importance of 'patient values' in their most recent definition of evidence-based medicine, they continue to limit recognition of the contribution qualitative research offers by excluding it from their hierarchy of evidence. Balancing the outcomes in research must begin with balancing the research paradigms used and the forms of evidence accepted. If we continue down the current path of relying almost entirely on quantitative research to understand our patients and evaluate our practice, exclusively using narrow levels of evidence, the result will be suboptimal decisions not fully informed by the full scope of relevant, valid and available information (Barbour, 2000; Bithell, 2000; Buetow and Kenealy, 2000; Greenhalgh, 1999; Jones and Higgs, 2000; Ritchie, 1999; Tickle-Degnen and Bedell, 2003).

Where quantitative research emphasises measurement and analysis of causal relationships between variables, qualitative research aims to understand phenomena working under the premise that humans and the human body cannot be separated from social experiences that contribute to shaping their individual pain and disability experiences. Underpinning the quantitative empirico-analytical paradigm is what has been labelled as a 'Positivist' philosophy that a universal truth or reality exists and when science advances far enough human conditions will be understood and standardised, generalisable interventions will be available. The 'absolutes' of the natural sciences are assumed to similarly exist in the human sciences with the discovery of knowledge limited only by the technological restrictions of scientific measurement.

In contrast, qualitative research operates under the philosophical assumption that truth and reality are not absolute. Instead the qualitative or interpretive paradigm sees reality as constructed by individuals through their life experiences resulting in unique and contextually bound experiences. Just as a hot sunny day will be interpreted differently by the beach goer and the drought stricken farmer, so too are experiences such as pain, disability and diminished self-efficacy interpreted differently by people living in different circumstances. Where quantitative research takes a phenomenon apart to uncover the effect of different variables, qualitative research attempts to reveal how all the parts work

together. Where quantitative research in the health sciences endeavours to establish cause and effect and measure effectiveness, qualitative research focuses more on understanding the meaning people have constructed, or how they make sense of their world and the experiences they have in their world. With the increasing acceptance of the biopsychosocial model and the significance mind-body physiology has to understanding health and disability (e.g. Butler and Mosley, 2003; Gifford, 1997; 1998; Martin, 1997; Watson, 2000; Wright, 2002; Zusman, 1998), combined with the difficulties in quantitatively measuring patients' health perspectives, the value of qualitative research to balancing our outcomes in research should be clear. By recognising the therapeutic process is not limited to the clinical moment or procedural intervention, but also transcends the day-to-day life between clinical encounters, qualitative research has the potential to broaden and deepen our understanding of health and disability (Hammell and Carpenter, 2004). Based on these arguments we need to recognise that evidence in evidence-based practice must include knowledge derived from qualitative research as well as quantitative research.

Traditionally these different foci of quantitative and qualitative research meant that the two research worlds were kept separate with different aims, methods of data collection and analysis and typically very different minded researchers. However, the strengths and limitations of the quantitative paradigm combined with the strengths and limitations of the qualitative paradigm, have led to a call to breakdown the political research walls separating these two groups with the clinical questions being the common ground on which to unite them (Hammell and Carpenter, 2004; Miller and Crabtree, 2000; Ritchie, 1999). Qualitative research provides a different form of evidence that needs to be recognised alongside the RCT. Miller and Crabtree have conceptualised a multimethod RCT with qualitative methods addressing issues of context and meaning and quantitative methods providing measurement and analysis toward generalisation. While the two paradigms have different aims, by linking them through clinical questions they can inform each other for the collective benefit of a more complete understanding. Qualitative research can provide the context currently lacking in the traditional quantitative approach that presently dominates evidence-based practice. Achieving this integrated balance of research paradigms requires cross-disciplinary relationships between qualitative and quantitative researchers and utilisation of a range of consultants including psychologists, sociologists, epidemiologists, statisticians and health economists as required. There are multiple ways in which qualitative and quantitative research might be combined with a clear need for studies to be performed longitudinally in series toward a larger research agenda. However, the two paradigms also can be successfully integrated in a single study and a successful example of this is discussed.

BALANCING METHODS OF PSYCHOSOCIAL DATA COLLECTION

Numerous variables are now recognised as potentially contributing to our health, either as genuine risk factors to the development of a health condition or as factors influencing how we cope with injury or illness (Main et al., 2000; World Health Organization, 2001). In recognition that assessment of physical function and impairment alone are insufficient to provide a complete health profile for describing patient populations and detecting change, subjective views of health status, quality of life and patients' perspectives on their pain, disability and future prospects, are increasingly being measured in quantitative studies. Where this information would traditionally have been gleaned from the subjective examination, this data is now being measured in research and practice through the use of questionnaires. While psychometric testing ensures questionnaire test-retest reliability, and internal consistency and validity are established against other accepted measures (criterion validity) and population expected trends (construct validity), significant limitations exist with the variability of meanings of questions and depth of information that can be obtained from this format of data collection (Hunt, 1997; Mallinson, 2002). Despite convincing evidence from psychology and sociology that processes involved in interpreting questions and selecting answers are complex and non-uniform, a surprisingly un-researched aspect of questionnaire validity is the shared understanding of questions and response options. Examples of these problems are highlighted in a study by Mallinson (2002) who investigated patients' understanding of questions and response options to the SF-36.

BALANCING REPORTING RESEARCH DETAILS AND RESULTS

Confronted with a growing number of systematic reviews, based largely on what is typically labelled as methodologically limited research, practising clinicians face the daunting challenge of maintaining best practice based on best evidence when the evidence is still largely not available or is incomplete. Even when an RCT or systematic review can be located that investigates the condition of interest,

numerous issues must be considered for the clinician to have confidence in the applicability of the findings to their patients.

While physiotherapy research continues to improve, greater care is needed in the reporting of research details, including patients' disability and pain experience perspectives, the therapeutic environment and the interventions themselves. Simple accounts of the type of intervention applied, such as mobilisation or stabilising exercises, without explanation of the sorts of assessment findings and associated reasoning used to guide treatment selection and progression, are insufficient to steer clinicians wishing to apply these interventions themselves. In the end, sufficient detail should be provided to enable others to understand the key indicators on which treatment decisions were based with sufficient contextual information regarding the therapeutic environment and manner in which interventions were delivered (educatively, behaviourally and humanistically) to give readers a sense of being observers of the therapy itself. Such 'thick descriptions' of context are characteristic of research reporting from the qualitative paradigm and anything less than this is not a valid account of events and does not do justice to the real-life intricacies of clinical practice. This is illustrated in example provided by Linton (1998) where the way in which an early intervention for acute back pain was administered became the difference between a highly successful intervention and one that may have actually increased the problem. This would not be surprising to practicing clinicians who know well that the manner in which a therapy is provided is critical to its success.

In addition to greater reporting of research details, greater caution is needed in conclusions reached, especially in systematic reviews that openly critique the quality of research on which they report. At our recent Musculoskeletal Physiotherapy Australia conference in November 2003, the significance of psychosocial factors, or the so-called 'Yellow Flag' risk factors to chronic pain and disability (Kendal, 1997; Watson and Kendall, 2000) was challenged on the basis of a systematic review of 15 prospective studies, five of which investigated prognostic indicators in patients with acute low back pain (Pengel et al., 2003). The conclusion from the review, and the message delivered at the conference, was that the significance of these factors in predicting chronicity has been overstated and those in the audience were discouraged from placing much significance on their screening or management. However, another systematic review similarly investigating the prognostic strength of psychosocial factors, also using prospective studies but including studies with populations having no history of back pain, populations with acute back pain and populations with chronic back pain, reached essentially the opposite conclusion that psychosocial risk factors are an important variable influencing chronicity (Linton, 2000).

Clinicians reading reviews and listening to review reports in conferences deserve a more complete account of the range of evidence both supporting and not supporting a particular construct or management approach before arguments are put forward for a particular case. Care is needed not to confuse 'no evidence of effect' with 'evidence of no effect' and conclusions made on the basis of methodologically poor studies need to be limited to the former. In the presence of insufficient evidence, attempts to dissuade clinicians from applying the construct or intervention investigated should be avoided. This seems particularly important in research of psychosocial factors where current psychosocial assessment/data collection is limited to questionnaires incapable of elucidating an individual's full pain/disability experience.

The importance of clinical reasoning to applying research evidence and managing patients that fall outside the available evidence

While further research is needed to explore what constitutes expertise, the requirement to draw on expert opinion and personal experience-based evidence in order to apply the results of research is enormous. Evidence-based practice requires professional judgement and sound clinical reasoning. Reasoning is needed to evaluate the quality of evidence, to apply that evidence and to manage those patients whose unique clinical presentation fall outside the population characteristics where evidence does exist, or what Schön (1983) calls the grey zones of practice. Most patient problems are multifactorial, often with more than one source of pain or impairment and typically with their own unique mix of environmental, psychosocial and physical contributing factors. Evidence-based practice is not cook-book practice and therapists need a holistic understanding of health and disability and appropriate knowledge and skill in clinical reasoning if they are to successfully and critically apply the

evidence that is available from both research and their own experiences. Models of health and disability described by the World Health Organisation (2001), Gifford (1998) and Main et al. (2000) are discussed as important to assist therapists' conceptions of the multiple determinants of health and their application of research evidence to practice.

To assist therapists to transfer these conceptual models to actual decision making in practice, the concept of 'Hypothesis Categories' is put forward to represent the categories of decisions needed when taking into account the multiple factors that can contribute to an individual's pain or disability experience (Jones and Rivett, 2004). Physiotherapy research and the clinical guidelines that emanate from this research, assist clinicians to recognise clinical patterns of presentation along with general, and sometimes more specific, strategies of management. It is then up to the clinician to use their knowledge of this evidence along with their reasoning and therapeutic skills to apply, and as required, modify it, for their own patients. Where evidence is lacking clinicians must draw on their own experiences minimising error by adopting critical and reflective reasoning processes. Just as the models of health and disability and the hypothesis categories can assist clinicians in applying research findings to clinical practice, so too can greater awareness of the focus of your reasoning throughout your interactions with your patients assist your application of research results and management of those patients for whom formal research investigating their presentation is still lacking. Clinical reasoning strategies used by expert physiotherapists identified in a qualitative study are discussed and the distinction between understanding and managing the patient's physical problem to effect change (requiring biomedically driven cause and effect thinking and action, or 'diagnostic reasoning' and 'procedural management') versus understanding and interacting with the person to effect change (requiring biopsychosocially driven 'narrative reasoning' and 'communicative management') is highlighted (Edwards, 2001; Edwards et al., 2004). A parallel between these directions of thinking and action in practice and the quantitative and qualitative research paradigms that inform practice exists such that diagnostic reasoning is carried out through the hypothetico-deductive process analogous to the empirico-analytically based quantitative research paradigm. In contrast, narrative reasoning is closely aligned to the interpretive qualitative research paradigm. In practice expert clinicians regularly move between these two key areas of thinking through all aspects of their assessment and management (Edwards et al. 2004). While the quantitative and qualitative research paradigms have much to offer on their own, multimethod research that integrates both paradigms, similar to how therapists operate in the real world of clinical practice, also has much to offer.

PROMOTING CHANGE IN PRACTICE

Linton (1998) highlighted one of the greatest challenges of evidence-based practice is to facilitate change in practice behaviour when new evidence is available. The development of practice guidelines is steadily increasing. For example, Maher (2003), in a keynote address at our recent MPA conference, provided statistics from the physiotherapy-evidence database illustrating a steady increase in low back pain research and subsequent practice guidelines with 422 RCTs, 98 systematic reviews and 19 published practice guidelines. However, published research and practice guidelines alone are insufficient to promote change in practice. Keeping abreast of current evidence is challenging in itself and instituting genuine change in practice standards is particularly difficult in today's economic climate. In fact a paradox of good practice has always been the cost associated with quality care. Practical suggestions for promoting change in practice are suggested and the more formal process of clinical practice benchmarking (Ellis, 2000) is explained.

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