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'There's a dance to be had' - The interface between UK chiropractors and evidence-based practice. A Reflexive Thematic Analysis

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‘There’s a dance to be had’ - The interface between UK chiropractors and evidence-based practice. A Reflexive Thematic Analysis

A thesis submitted for the degree of Doctor of Health by Keith Walker

Department for Health University of Bath

August 2022

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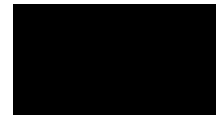
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Abstract

Background

Surveys of health care practitioners' including chiropractors' attitudes beliefs and knowledge about evidence-based practice (EBP) make assumptions about the understanding of the term. They regularly assume that this paradigm is solely concerned with quantitative research. Furthermore, much of the work in this sphere has taken place outside of the UK. A good understanding of the relationship with evidence-based practice is lacking in the British chiropractic profession.

Methods

As an exploratory question, an inductive research strategy was used. This employed observations of a criterion selected sample of 20 UK chiropractors in the southwest, followed by semi-structured interviews. The data was transcribed by the author and coded using NVivo software. It was subsequently analysed using reflexive thematic analysis.

Results

Four themes were developed from the data; 'The otherness of EBP', 'There's a dance to be had: performance and EBP', 'An incongruence of thought' and 'An imbalance of practice knowledge'. These participants found EBP difficult to define. They had an incongruent relationship with the concept, claiming that it was important for the profession but not necessary for practice. An observation was made linking more rigid examination and treatment rituals with a lower regard for the tenets of EBP. These participants maintained that results were more important to their decision making than practice knowledge from other sources.

Discussion

Using a taxonomy of practice knowledge developed by Joy Higgs and Angie Titchen, the incomplete and unresolved conception of EBP was explored. Practice

knowledge from practical experience and personal judgement featured heavily in the data. Comments around the unsuitability and unfamiliarity of propositional knowledge balanced claims that 'results' were more important when informing decision making. A model showing the relationship between the different aspects of practice-based knowledge, EBP, clinical reasoning and reflection was presented as a way of increasing chiropractors' relationship with EBP and resolving some of the contentions they feel.

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Abbreviations:

Abbreviations	Meaning
AECC	Anglo-European College of Chiropractic
CAM	Complementary and Alternative Medicine
CPD	Continual Professional Development
EBHC	Evidence-Based Healthcare
EBM	Evidence-Based Medicine
EBP	Evidence-Based Practice
GCC	General Chiropractic Council
GP	General Practitioner
HPC	Health and Care Professions Council
HEI	Higher education Institutions
ISTM	Instrument Assisted Soft Tissue Mobilisation
MSK	Musculoskeletal
NICE	The National Institute for Health and Care Excellence
OA	Osteoarthritis
RCC	Royal College of Chiropractic
RCT	Randomised Controlled Trial
SMT	Spinal Manipulative Therapy
SOT	Sacral Occipital Technique
TDF	Theoretical Domain Framework
WIOC	Welsh Institute of Chiropractic

Conventions used in the presentation of quotations from the qualitative data.



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I would like to dedicate this endeavour to my father, George Robert Walker DC. Sadly, he did not live to see the completed manuscript however if there is anything of worth in this thesis it is inspired by him and his relentless pursuit of sense in an uncertain world.

1. Chapter 1: Introduction.

1.1.Introduction to the topic.

There follows an account of a journey, in many ways a deeply personal one, in which I attempt to shine a light on the relationship of one profession with a process of health care. This profession is my own of the last 30 years, that of Chiropractic, and the process is evidence-based practice (EBP). Over the next 6 Chapters, I will inform the reader of the reasons that form a backdrop to my question, its background in the literature, the limitations on the type of question I could ask, the research stance, methodology and method that answers the question most accurately, my findings together with a reflexive interpretation and finally the conclusions reached. Before a brief introduction to chiropractic and EBP however a short reflexive statement about the reasons why I chose this topic for my doctoral study will contextualise its message.

1.2. A Reflexive Account.

I referred to this account as a personal one. In the following paragraphs I will explain why the question I am answering has a personal resonance. I do this for two reasons; the first is that it will help the reader to understand the motivation underpinning this enquiry. Secondly and perhaps more importantly, this will help the reader to understand the perspective from which I view the professional issues around chiropractic. This will assist the reader to judge the views expressed here.

As Miles and Huberman state

“ It is good medicine, we think, for researchers to make their preferences clear.”
(Miles and Huberman, 1994, p.4)

I began my working life as a registered general nurse. I retrained and completed my chiropractic degree in 1991 since when I have been a practicing chiropractor running my own clinics. During my practice years I became increasingly frustrated that the information I was reading in academic journals did not reinforce my practice experience. I read how the manual therapies I used every day, seemingly with

reasonable effect, appeared to have little measurable benefit over time when applied experimentally to a controlled cohort (Rubinstein et al., 2011; Rubinstein et al., 2012; Menke, 2014). At the same time I was reading that many of the biomechanical explanations for the conditions I treated were being re-evaluated and rejected (Lederman, 2011). It appeared that the x-ray findings that I had been taught were demonstrating pathomechanical conditions resulting in pain, were poorly correlated with pain (Chou et al., 2009). I read that even basic testing procedures like palpation of the spinal vertebrae, underpinning a great deal of chiropractic theory, suffered terminally from extremely poor inter and intra-rater reliability (Stochkendahl et al., 2006). Spinal manipulation, a key part of the professional identity of a chiropractor, came under critical scrutiny in a way I was poorly equipped to deal with. I could not reconcile the science I was reading with my experience of clinical practice.

This led to two contradictory positions; the first emerged from my practice experience or, in EBP terms, my clinical expertise. Patients reported improvement in their conditions following my treatment. They returned with subsequent episodes for more of the same treatment. My colleagues seemed similarly successful. The second position was one where propositional knowledge or knowledge gained from respected sources seemed to indicate that my practice was ineffective. As a result of these competing positions, I began to experience what I came to realise was a deep sense of cognitive dissonance (Cooper, 2019; Hartman, 2009)

This doctoral thesis began as an evolving reflection on a set of beliefs and experiences which had led to a growing dissonance with my specialism. I questioned ever deeper the thoughts and ideas underpinning the profession of which I was a part. I asked myself, did my colleagues feel the same way as I did and, if they did, how did they resolve this conflict? I would have to ask them.

In this introductory chapter some basic information about chiropractic and evidence-based practice is outlined. In later chapters these subjects are explored in more depth where their characteristics and contentions will be brought to light. To understand the background to the problem of this thesis however some basic familiarity with the topics in question is required. A discussion about chiropractic and EBP requires some historical and philosophical context. Once these foundational

subjects are illustrated, the tensions that create the issues explored in this thesis will be outlined. Finally, there is a summary of the remaining chapters. We begin with a short history and background to chiropractic.

1.3. Background and History of Chiropractic

The World Federation of Chiropractic defines chiropractic as:

“A health profession concerned with the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system, and the effects of these disorders on the function of the nervous system and general health. There is an emphasis on manual treatments including spinal adjustment and other joint and soft-tissue manipulation.” (World Chiropractic Federation, n.d.)

The Royal College of Chiropractors (RCC) define it as:

“Chiropractic within the UK is a statutorily regulated profession and should not be regarded as a treatment, intervention or mono-therapy. Chiropractors provide a wide range of treatments/interventions including, but not limited to, manual therapy, exercise rehabilitation and self-care advice, and utilise psychologically informed programmes of care. Chiropractic, like other healthcare professions, is informed by the evidence base and develops accordingly.”(Royal College of Chiropractors, n.d.)

These definitions are not universally agreed by all chiropractors. There are those who suggest that they are too narrow. This is explored in the literature review and its significance to this study explained (see section 2.4.2)

Chiropractic began in the Midwest of America in the late 19th Century when a magnetic healer and spiritualist called Daniel David Palmer allegedly cured one Harvey Lilard, a janitor of a building in Davenport Iowa, of deafness (Kaptchuk and Eisenberg, 1998). He did this by manipulating the man’s cervical vertebra and so the basic tenet of early chiropractic was formed. Palmer argued that that the proper

alignment of the spine was the source of all health. The theoretical mechanism that he proposed derived from concepts in magnetic healing and orthodox medicine about spinal irritation, an imprecise diagnosis of a number of various conditions (Ibid). He proposed that the flow of 'energy' along the pathway of the spinal nerves was a predictor of health, and any obstruction and impedance was a cause of disease. Palmer proposed that this energy was referred to as 'Innate intelligence' (Palmer, 1910; Wilson, 2012). Any misalignment of the vertebra might cause interference of the spinal nerves and therefore impede this 'innate intelligence' which in turn might inhibit their function and cause 'dis-ease'. He termed this phenomenon a 'subluxation'. The principal weapon against this malady is the chiropractic 'adjustment', the description of the manipulative procedure applied to particular vertebra of the spine or indeed to any joint (Wilson, 2012, p.36). Modern day chiropractic has, for the most part, moved away from this position (see section 2.4.2 for a description of those who have not) however it still uses manipulation as a key therapeutic tool (Beliveau et al., 2017).

It is important to consider the term 'complementary and alternative medicine' (CAM) and how it relates to the profession. CAM is regularly defined as

"a broad domain of healing resources that encompasses all health systems, modalities, and practices and their accompanying theories and beliefs, other than those intrinsic to the politically dominant health system of a particular society or culture in a given historical period."(Susan Wieland et al., 2011, p.4).

Chiropractic falls into that category and is listed in the operational definition created by Wieland and colleagues (Ibid). Complementary medicine is the term given to non-mainstream approach to healthcare which is used together with conventional medicine: alternative medicine is an approach used in place of conventional medicine (US National Center for Complementary and Alternative Medicine, 2021). Although in the early days of the development of the profession, B.J. Palmer considered that "mastery of the spine meant mastery over nearly all disease" (Kaptchuk and Eisenberg, 1998, p.2219), chiropractic does not consider itself to be an alternative to conventional medicine (Newell and Lewith, 2016). If it were genuinely alternative, it would have to provide an alternative explanation for ill health.

Later in the literature review, a division between those chiropractors who might be regarded as alternative and those who might be regarded as complementary is identified and discussed in relation to their epistemological antecedents (see section 2.4.3).

The most common reason to consult a chiropractor is for musculoskeletal conditions of which low back pain is the most frequent (Beliveau et al., 2017) More generally, chiropractors are consulted for a variety of other musculoskeletal problems including neck pain and joint dysfunctions. Chiropractors in the UK typically work in private clinics where patients or their private health insurer meet the fees. In some countries, chiropractors are very much part of the fabric of health provision. In Norway and Denmark, for example chiropractors' fees are partially met by the state. In Switzerland, Chiropractors have been granted privileges similar to medical practitioners, including limited prescribing rights, referral for laboratory tests and the ability to prescribe sickness absence (Brown, 2013). In the UK, the profession is legal pursuant to the Chiropractic Act and is thereby regulated (Great Britain, 1994)

1.4. Chiropractic in the UK.

In the UK, Chiropractic has been in existence since the early part of the 20th century. The first British chiropractor was probably Arthur D. Eteson of Southport who was practicing in 1908 (Wilson, 2012, p.69). As of December 2021, there were 3186 registered chiropractors in the UK .This was a 2.6% increase on the registrations in the year 2020 (General Chiropractic Council, 2019). However 5 years earlier in 2017 there were 3220 registrants (General Chiropractic Council, 2017a). The number of chiropractic registrants appears to be at best static. As a comparison, there were 5427 Osteopaths (General Osteopathic Council, 2020). There are 55671 physiotherapists in the UK although this number will also include those who work in the in-patient sector and in other non-musculoskeletal specialities. (Health and Care Professions Council, 2019). The profession in the UK has a protected title and has been regulated by the General Chiropractic Council (GCC) since 1999. The GCC was established by the Chiropractic Act 1994 (Great Britain,

1994).

A number of surveys in the UK over the last few decades have attempted to describe the characteristics of chiropractors (Pedersen, 1994; Wilson, 2003; Pollentier and Langworthy, 2007; Fikar et al., 2015; General Chiropractic Council, 2016). They paint a picture of a profession equally split between male and female, on average 11 years qualified and with an average age of 46. The most recent survey from the GCC had a response from 625 chiropractors which at the time represented 20% of the profession. Sixty-four percent of them were self-employed and 31% of them worked on their own (General Chiropractic Council, 2016). Only 2 of the chiropractors in the 2016 GCC survey received direct referrals from the NHS, demonstrating that the profession is far from being integrated within the NHS.

Most chiropractors in the UK are trained in the UK. Nearly half of those who trained in Britain, trained at the AECC University College. **Figure 1** shows the proportion of Chiropractors trained in the different schools in the UK and those that come from abroad. There are 5 courses currently available in the UK which have been approved by the GCC (courses at the London South Bank University, and Teeside University have not yet graduated a cohort). They all offer a Master of Chiropractic over 4 or 5 years of study. Chiropractors have to complete a yearly learning cycle of Continuous Professional Development and obtain indemnity insurance in order to remain on the register (General Chiropractic Council, 2020)

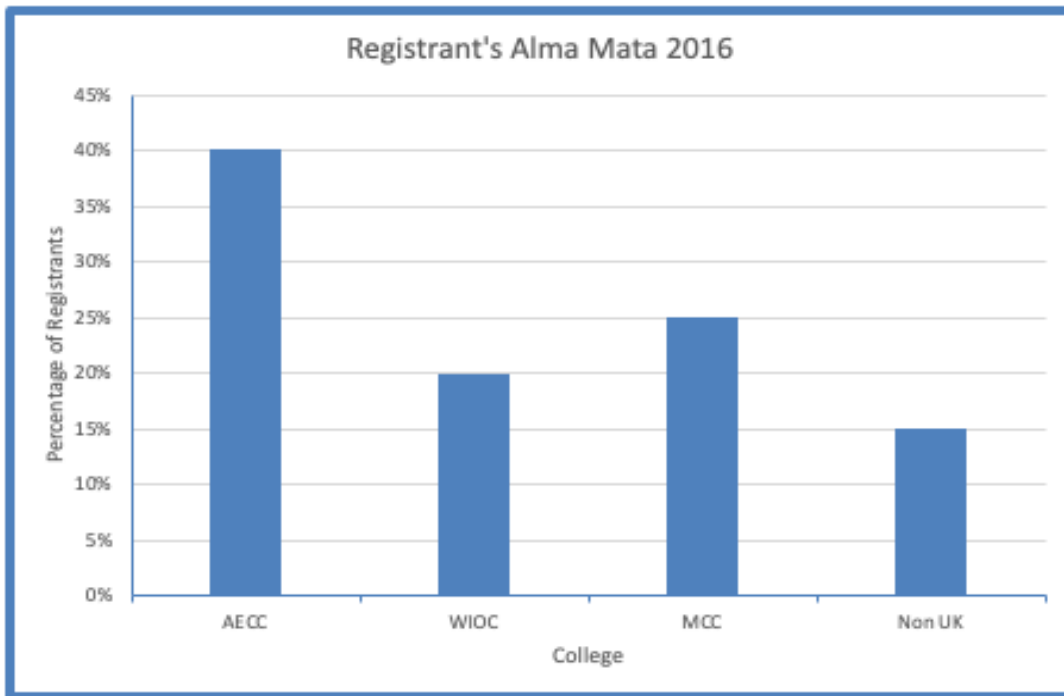


Figure 1: Percentage of chiropractors who have trained at the UK and non-UK educational institutions who offer a Masters of Chiropractic (General Chiropractic Council, 2016)

(Key: AECC = Anglo-European College of Chiropractors, WIOC = Welsh Institute of Chiropractic, MCC = McTimoney College of Chiropractic, Non-UK=Colleges outside the UK)

1.5. Broad conceptions about EBP.

Some of the basic characteristics of the chiropractic profession have been explored to provide sufficient understanding as a background to the research question. In this section, EBP is defined and explored. Some of the major criticisms of the framework are discussed in order to define its suitability as a subject for consideration in a chiropractic context.

Firstly however a brief note about terminology; the terms evidence-based medicine (EBM) and EBP have been used interchangeably here as they are in many texts on the subject (Gabbay and le May, 2011; Trinder, 2000). Other terms are used for this process, for example evidence-based health care (EBHC) or evidence-based decision making (Gray, 1997). Several issues of the Journal of Evaluation of Clinical Practice given over to a discussion on the theoretical foundations and practical applications of EBM use multiple iterations when referring to EBM. (Miles et al.,

2008). This thesis will follow Trinder and Reynolds (2000, p.17), in assuming that EBM is analogous with EBP. The nomenclature is more about the context in which EBP (or EBM) is practiced rather the essential essence of the concept.

The standard definition of evidence-based medicine or practice is that given by Sackett in his paper of 1996.

“Evidence based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.” (Sackett et al., 1996, p.72)

This definition essentially contains all the aspects of EBP that have become clear since its inception as a paradigm for medical or healthcare practice in 1992 (Guyatt, 1992).

Howick gives a definition that shifts the emphasis and promotes clinical expertise.

“EBM requires clinical expertise for producing and interpreting evidence, performing clinical skills and integrating the best research evidence with patient values and circumstances.” (Howick, 2011, p.188)

Greenhalgh reinstates the primacy of best evidence identifying that statistical significance is an important feature.

“Evidence based medicine is the use of mathematical estimates of the risk of benefit and harm, derived from high quality research on population samples, to inform clinical decision-making in the diagnosis, investigation or management of individual patients.” (Greenhalgh, 2014, p.1)

At its heart, EBP is the concept that health care decisions (or more generally those made by any group of professionals) be less driven by custom and more by a systemised, experimentally based measure of effectiveness. This is to be combined with the expertise of the healthcare professional and the wishes and values of the patient.

1.6. Difficulties with EBP

The evolution of this paradigm as the accepted notion of how health care should be practiced is as difficult to explain as it is obvious to witness (Trinder, 2000). An explanation might be that the concept has a certain axiomatic characteristic. It suggests the question, who would not wish to provide health care to the sick using anything but the best evidence available, regardless of how it might be interpreted. Nevertheless EBP has been subject to criticism more or less since its (accepted) coming to being in 1992 (Guyatt, 1992; Cohen et al., 2004). A serious criticism is that it denies the individuality that is expected of quality health care (Thomas, 2016; Greenhalgh et al., 2014). EBP gives greater emphasis to evidence derived from population-based studies where randomisation, blinding and a variety of other measures aimed at increasing internal validity are present. Correctly this is aimed at producing work that can reasonably make claims about causality instead of correlation. This evidence is by its very nature however incomplete. By studying a proportion of the population in question, and drawing conclusions based on the likelihood of the size and nature of effect under study occurring by chance, not all occurrences are going to be anticipated. This type of evidence therefore can only ever be described as 'best evidence' in that it does not always fully inform the decision-making of the healthcare professional about the individual before them. A balance between the information from best research evidence, clinical expertise and the wishes of the patient has to be struck so that effective care can be given. The nature of where and how this balance is made has created tensions in all medical fields including chiropractic.

In this last section we have defined EBP and explored a major criticism of the paradigm. EBP is a paradigm of health care decision making which from its inception has been characterised by three pillars: best evidence, clinical expertise, and patient values. Earlier, a background of chiropractic and its current practice in the UK was given. These two concepts will now be worked together to explore their appropriateness as a subject for enquiry.

1.7. Does Chiropractic Work?

The question presumes that chiropractic is a treatment. Much of what we will discuss in chapter 2 will demonstrate that chiropractic is not one treatment (see section 2.4.5). It might be better considered as a collection of principles around which care for those who consult chiropractors might be allocated. Perhaps more usefully it would be wise to demonstrate what these principles are. In Chapter 2, I discuss the two basic positions that represent competing factions within the profession and the essential principles upon which they act. In short one faction, termed 'Straights,' are satisfied with a metaphysical explanation for the causes of ill health and the other faction, named 'Mixers,' are not. 'Mixers' share theories and principles of practice that other healthcare practitioners might recognise. For example, they would recognise that manual therapy has a limited ability to effect physical change on vertebral position. These terms were originally proposed by BJ Palmer, the son of the founder of Chiropractic, DD Palmer (Kaptchuk and Eisenberg, 1998). For this study, we are normally referring to the far greater majority of chiropractors who would align themselves with more orthodox principles of healthcare. The term 'mixers' is seldom used latterly but in terms of this divide, this majority could be termed 'mixers'.

When considering the question headlining this section therefore, the more relevant question to ask would be, is intervention A (one that chiropractors regularly provide) efficacious for condition B (one that chiropractors normally treat)? It is helpful to use a specific condition and a specific treatment that chiropractors commonly engage with to illustrate the answer to the question. Low back pain is a common condition that chiropractors treat. They usually treat it with manipulation, exercise and lifestyle advice (Beliveau et al., 2017). In the case therefore of low back pain treated by chiropractors, the question should be reframed do interventions chiropractors use (manipulation, exercise and lifestyle advice) to treat low back pain, work?

The National Institute for Health and Care Excellence (NICE) in its updated guideline in 2020, recommend:

“Consider manual therapy (spinal manipulation, mobilisation or soft tissue techniques such as massage) for managing low back pain with or without sciatica, but only as part of a treatment package including exercise, with or without psychological therapy.” (NICE, 2020, sec.1.2.7). Later, they advise.

“Mobilisation and soft tissue techniques are performed by a wide variety of practitioners; whereas spinal manipulation is usually performed by chiropractors or osteopaths, and by doctors or physiotherapists who have undergone additional training in spinal manipulation. Manual therapists often combine a range of techniques in their approach and may also include exercise interventions and advice about self-management.” (NICE, 2020, p.375)

A large systematic review funded by the RCC looking at the clinical effectiveness of manual therapy for the management of musculoskeletal and non-musculoskeletal conditions demonstrated that evidence was ‘moderate’ for manual treatment for acute or chronic low back pain (Bronfort et al., 2010). Bronfort describes ‘moderate’ evidence as “sufficient to determine the effectiveness relative to health outcomes, but confidence in the estimate is constrained.” (Ibid p.3) He also found similar levels of evidence for a range of other conditions chiropractors regularly see from adhesive capsulitis to cervicogenic headaches.

A network comparative review of manual therapy for spinal pain using a meta-analysis suggests that manual therapy for spinal pain is much less effective than natural history and non-specific factors (Menke, 2014). A more recent systematic review of treatment options for musculoskeletal conditions in primary care suggests that there is limited evidence for the use of manual therapy (Babatunde et al., 2017). A large review of the global burden of low back pain suggests that spinal manipulation is a ‘second line or adjunctive treatment option’ (Foster et al., 2018).

In summary therefore there is value in using manual therapy when provided with other interventions such as exercise and lifestyle advice.

1.8.Chiropractic and EBP

Can the concept of EBP be appropriately applied to the profession of chiropractic? It has already been observed that there is a proportion of chiropractors who do not privilege what might be termed a recognised authentic method of knowing. They hold onto a belief system that refers to a dogma created by early 20th century healers (Palmer, 1910). They do not see the need for any alteration of these original explanations for health regardless of the progress of modern medicine. If this were to be the case across a large part of the profession, then the question about the relationship chiropractors have with EBP might be redundant. If chiropractic relied on explanations that disregarded the customs and traditions of the generation of knowledge, then why should it set any store by the judgements of a completely irrelevant framework of thought?

Indeed, this is a central assumption underpinning this thesis - I am contending that chiropractic, as all other health care, shares a responsibility to provide services that are formulated from the best evidence available, is informed by the expertise of the practitioner and driven by patient preferences. I suggest this because to do otherwise would be to imply the profession has non-orthodox epistemic roots. It would be considered an alternative therapy as opposed to a complementary one. If the profession were to practice in any other way, for example to actively ignore the experimental evidence around its central business, then it would be working ontologically and epistemologically in another domain apart from that of a scientific one. It would be acknowledging a system of thought that would be more at home in endeavours connected with matters of faith, or at least in domains where the pursuit of authentic knowledge and facts are not central to its core activity.

As further evidence that chiropractic is a healthcare profession that is capable of falling under the EBP umbrella, it is helpful to cite the profession's statutory regulator. The General Chiropractic Council (GCC) has in its core standards document that the care chiropractors select and provide must be:

“informed by the best available evidence, the preferences of the patient and the expertise of practitioners” (General Chiropractic Council, 2010, sec.3.2)

Furthermore, Chiropractors are also advised when providing public health interventions to ensure that the interventions:

“a) are based on the best available evidence.

b) are appropriate for the populations concerned.” (General Chiropractic Council, 2010, sec.3.6)

Clearly therefore from a UK point of view the profession has a legal and professional responsibility to practice in a way that shares the central tenets of EBP. Chiropractic and EBP can therefore be considered together, and their relationship explored.

In the previous sections we have explored both chiropractic and EBP and established that chiropractic has a claim to use EBP as a paradigm of practice. Investigating the relationship between the profession and EBP is therefore a valid enquiry and potentially useful. We go on to identify where the tensions lie.

1.9. Identifying the Problem

Chiropractors make use of a wide variety of theories, tests and interventions common to other health care practitioners who treat musculoskeletal conditions. Central to the chiropractor’s identity is the use of spinal manipulation which for historical and contemporary reasons remains the mainstay of much of a chiropractor’s business. And so, chiropractic thrives as a therapy that principally gives help to those with common musculoskeletal conditions such as low back pain.

The treatment of common low back pain with spinal manipulation is common in chiropractic offices (Beliveau et al., 2017). There is an increasing understanding that the assumptions made in order to inform a decision about when and where to manipulate cannot be robustly defended (Leboeuf-Yde et al., 2002). Evidence has begun to mount that the delivery of spinal manipulation has similar outcomes to

many other interventions for uncomplicated low back pain (Rubinstein et al., 2012; Rubinstein et al., 2019) The mechanisms which have explained its alleged effectiveness become increasingly challenged, the use of manipulation has become less defensible.

There is another tension concerning EBP within the chiropractic profession. Studies have suggested that a proportion of chiropractors adhere to outmoded and historical explanations for their care (McGregor et al., 2014; Gíslason et al., 2019). They view the subluxation as the principal obstruction to health. These would be the 'straights' referred to earlier. It is estimated that this proportion might be 20% of the chiropractic population. Later in Chapter 2 this is explored in more detail, however it can be assumed that there is a proportion of chiropractors for whom EBP cannot be reconciled with their view of how the profession began and should currently be practiced (see section 2.4.2).

Modern day healthcare is delivered within a framework designed to use epidemiologically derived information such that decisions about caregiving can be based on an epistemologically sound footing. This framework is commonly known as evidence-based practice. Chiropractors are required to adhere to the basic tenets of EBP by their regulators (General Chiropractic Council, 2010). The public trust healthcare professionals to deliver care that is current, informed and in their best interests (van Mook et al., 2009). Evidence-based practice also claims that decisions made about healthcare should be informed by the expertise of the health caregiver and the preferences and values of the patient. Observing the demand for chiropractic services by patients and the willingness to deliver this care by chiropractors (and others), might suggest that spinal manipulation for low back pain is an effective treatment for low back pain. Demand for services, however, cannot tell us about the worth of those services. When measured in a population and subjected to assessment by systematic review and meta-analysis the effect of manipulation in these conditions is minimal at best even if it is claimed that 'moderate' evidence exists to claim efficacy (Bronfort et al., 2010).

If chiropractors aspire to claim research is an important source of relevant

knowledge for their decision-making, the impression that chiropractors continue to manipulate as frequently as they used to, and patients demand manipulation as earnestly as they used to, might produce a certain tension. On an individual level the competing beliefs that manipulation helps in patients that chiropractors see, and that research insists it is, at most, better than doing nothing, could lead to cognitive dissonance. This dissonance begs the questions, “What do Chiropractors make of this issue? How do they balance the competing positions of population-based research and the experience of their own practice? What do they make of the interface between evidence-based practice and their own practice?” These tensions are the basis of this thesis.

1.10. What Follows

In Chapter 2 the current state of knowledge about how chiropractors interact with EBP is explored. It shows that there is little understanding of this topic. Although this is the case for chiropractic, other professions, including: Osteopathy, Physiotherapy and Occupational Therapy have been studied to assess their use of EBP, and this evidence is considered here.

EBP and clinical reasoning are treated broadly as different traditions. The similarity between these two domains is explored and new ways of addressing the relationship of chiropractors to both terms are introduced. Finally, the problems outlined here and in Chapter 2 will be brought together, a question formed and aims and objectives set.

Chapter 3 gives a background to the paradigm, methodology and methods chosen to answer the research question and meet the aim of the study. An argument is built for choosing a qualitative approach. A description of the mechanisms used to ensure rigour and quality is outlined and a statement of the limitations made.

Unlike a quantitative approach where numerical results are more easily understood using a separate and distinct presentation, the results of qualitative work are sometimes easier understood when presented together with the arguments and

discussions they provoke. In this thesis this approach – of combining the results and the discussion - is used in chapters 4 and 5 where two sets of the important themes are identified and their relevance to the question discussed. Chapter 4 discusses themes exploring these chiropractors' relationship with EBP whilst chapter 5 probes the basis of their epistemological preferences and how this relates to their practice.

Finally, the conclusions are presented in chapter 6 together with the implications of the study findings, possible future enquiry and recommendations for practice and education.

2. Chapter 2: Literature Review

2.1. Introduction

The previous chapter gives an overview of the problem being addressed and some questions posed by the issue of how chiropractors' interface with EBP. This chapter begins with a fuller statement of the question under consideration. It goes on to explore the literature that describes the relationship between chiropractors and EBP and other healthcare professions and EBP. It explores the theories that might help to view this issue including but not limited to clinical reasoning. It outlines the importance of this unique work. Finally, the aim of the enquiry is stated, and the objectives needed to achieve this aim are listed.

2.2. The question.

This thesis is about the way that chiropractors think, feel and engage with the concept of EBP. It does not try to define what the evidence-base is or if the chiropractors are achieving a set standard of evidence-based work. The project began as an interest in how chiropractors view the boundary between their experiences of practice and the imperatives of EBP. It probes the interface between what Higgs and Titchen refer to as professional craft knowledge and propositional knowledge (Higgs and Titchen, 2001). This taxonomy of knowledge is explored in Chapter 5 (see section 5.2) however for the purposes of this chapter, professional or craft knowledge is the practical knowledge gained from clinical experience and propositional knowledge is the codified, written knowledge that is generally acquired through study.

It has already been mentioned that there is no attempt here to discover *if* chiropractors are evidence-based practitioners. This study inductively develops concepts to explain observations made. Theory building "is the search for essences, pervasive and determining ingredients, and the makings of laws." (Stake, 1978, p.5). It is the purpose of this thesis to explore the phenomenon of the relationship

chiropractors have with EBP, not to count it or estimate its incidence or prevalence. These are different questions requiring different methods to answer.

2.3. Search Strategy

Reflecting the exploratory nature of the enquiry the search of literature was broad and kept deliberately so. The question was broken down into the domains provided by the Population, Comparator, Intervention and Outcome (PICO) framework (McKenzie et al., 2022). In this case the Population was chiropractors, the Intervention, EBP and there were no Comparators or Outcome. Keywords for the initial searches included chiroprac* (the '*' character is a wildcard in many databases), evidence-based, EBP and other acronyms for EBP such as EBM and EBHC. These keywords were combined using Boolean operators. As the review progressed, other professions such as Physiotherapy and Osteopathy were used as populations and searched for evidence-based practice. A generic term for professions involved in healthcare - for example health as a population - failed to correctly identify relevant material.

The findings in Chiropractic were easily identified partly because the literature base of all chiropractic related publishing is relatively small. Even in Spring 2023, a search of all fields in PubMed with the term 'chiroprac*' yields a little under 10,000 results. It was therefore perfectly possible to search all the results in PubMed or a catalogue such as Web of Science for titles or abstracts that contained the word stem chiroprac*. When combined with the terms for EBP (such as EBM or EBHC) using the Boolean operator 'AND', a manageable number of titles were retrieved. This was not the case for some other professions such as physiotherapy where there is greater volume of literature. In this case limits such as date range, language and type of study were applied which secured manageable numbers of relevant studies.

Cochrane was searched for synthesised material. The specialist physiotherapy database PedRo was searched for musculoskeletal (MSK) literature. ICL (Index to Chiropractic Literature) was searched as a database solely dedicated to Chiropractic literature and was helpful for literature that appeared in non-indexed journals.

Searches using MeSH (Medical Search Headings) were unhelpful. A productive source of material were hand searches and citation searches of articles which had been previously identified as useful.

As the review progressed the domain of clinical reasoning was searched in similar ways identifying the approach of each of the major health professions concerned. Finally searches for practice-based knowledge were undertaken using keywords such as knowledge, propositional, and epistemology. These terms, combined with terms for health care professions as described above, revealed work around practice-based knowledge.

2.4.What do we currently know about EBP and Chiropractors

In this section what is currently known about the subject of chiropractic and EBP is discussed. It will discuss the body of literature and identify the important themes that might inform the answer to this question.

2.4.1. What is evidence-based chiropractic?

In order to understand the relationship chiropractors, have with EBP, several domains will have to be examined. Firstly, EBP in chiropractic will have to be defined. Once that is established, this section will go on to describe how research has tried to find out about chiropractors and EBP.

Chiropractic is a profession and not a therapy. Whilst chiropractors might be best known for manipulation, it is certainly the assumption among chiropractic educators and regulators and other healthcare professionals that chiropractors should provide a blend of therapies or interventions suitable to the condition and not solely rely on one approach for all eventualities (NICE, 2020; General Chiropractic Council, 2010). A description of 'evidence-based chiropractic' would involve a biopsychosocial approach which would include manual therapy, lifestyle and exercise advice as well as recognition that musculoskeletal pain is a multifaceted construct (Engel, 1977).

In essence the care provided by chiropractors is not uniquely 'chiropractic'; it uses modes of diagnoses and treatments that are practiced by other professions. There are no procedures that differentiate a chiropractor from an osteopath or from a musculoskeletal physiotherapist, that is unless you adhere to outmoded descriptions of past practice which a minority of chiropractors (and some osteopaths) still privilege.

Manipulation of the musculoskeletal system, primarily the spine is a case in point; a description of this procedure consists of the application of a force on a joint, the direction of the thrust, and the cavitation of the joint or the popping sound commonly associated with the procedure (Evans and Lucas, 2010). These features of practice are taught in osteopathic, chiropractic and physiotherapy environments. In physiotherapy, manipulation is often left to postgraduate study. They share the same biomechanical rationale and although are often termed 'chiropractic' manipulation or 'osteopathic' manipulation, the name alone does not indicate an alternative biomechanical explanation.

Further evidence that manipulation is viewed as similar between professions can be found in large research trials of its efficacy. A Medical Research Council (MRC) funded multi-centre trial comparing manipulation and normal care for low back pain found that there were insufficient differences between a manipulative thrust delivered by a chiropractor, osteopath or musculoskeletal physiotherapist and used all three professions to deliver their intervention (Harvey et al., 2003). The trial admitted that although the frequency of the high velocity manipulative thrust or 'Grade V's' might be less in the Physiotherapy group, it remained essentially the same procedure. Some national guidelines take a similar stance. The guidelines from the National Institute for Health and Care Excellence (NICE) on low back pain recommend manipulation as part of a package of care but do not nominate who must provide this treatment (NICE, 2020). The European guidelines on the treatment of chronic low back pain define manipulation without nominating which particular profession might deliver it (Airaksinen et al., 2006).

Evidence-based chiropractic can be said to be the practice of a health care

discipline that contains diagnoses, tests and treatments that are evidence-based rather than a reference to a profession. The term evidence-based here has no 'chiropractic' interpretation, it can be argued, because no substantial difference in common procedures associated with the profession are evident beyond their names. Therefore, having established that chiropractic uses procedures that can be regarded as evidence-based or not evidence-based, it is reasonable to identify what they actually do.

Before an exploration of the practice of chiropractic, it will be helpful to identify basic ontological and epistemological faults that exists in the history of chiropractic and persists to this day in a proportion of the chiropractic population. This refers to the original theories of early chiropractic which some chiropractors believe to still be relevant in today's practice. It centres on the concept of the subluxation as described by the originator of chiropractic, DD Palmer and how that concept is still revered today by some practitioners.

2.4.2. The Concept of Subluxation and Chiropractic in the UK

The subluxation complex has dominated chiropractic discourse for a century. It is important to situate this defining concept here to understand how it features in current practice. The subluxation complex is the notion that a joint, principally those of the spine, if misaligned might impinge on an adjacent nerve and impede the function of that nerve, effecting the health of the organism. It has been a claim of some chiropractors that they, and only they, are able to locate these subluxations and, with manipulation, remove them (Keating et al., 2005). They do so using a 'chiropractic adjustment', the term given to manipulation performed by a chiropractor.

Understanding the characteristic and place of a subluxation is important because it is often suggested that this is the prime motivator of all chiropractic practice and that it is a universal position held by all chiropractors (Homola, 2016; Smith et al., 2016; Ernst, 2008). This is not an accurate representation. Later in this section, the incidence of the numbers of chiropractors who hold this position will be discussed.

The matter might be confused by the fact that most chiropractors use manipulation (see section 2.4.5). It is a staple of both so called evidence-based chiropractic and subluxation-based chiropractic so the reasons for manipulating are often confused.

In terms of traditionally accepted standards of evidence, i.e., quantitative science that values high levels of internal validity, for example RCTs or systematic reviews, there is no work that supports the notion that subluxations are a predictor of ill health or that the absence of them has any meaning clinically. One of the obvious reasons why this might be is the lack of a reliable way to measure the existence of the phenomenon. A systematic review examined if there was any basis for the claim that removal of subluxations is clinically helpful. Using systematic and transparent search methods, explicit inclusion and exclusion criteria, quality assessment, and synthesis of results having registered the study with Prospero, they concluded that there was no evidence for the effect of chiropractic treatment on primary or secondary prevention of disease (Goncalves et al., 2017).

The concept of the subluxation is difficult to evaluate if it is unmeasurable. Mirtz in his paper of 2009 uses Hill's criteria for the basis of a claim that "undesirable event B will be influenced by a change in the environmental feature A" to investigate the scientific basis for the subluxation (Hill, 1965, p.32). In it he summarises how the concept of subluxation fails on all counts (Mirtz et al., 2009). He outlines that a search of the literature fails to find work that can objectively locate or define the subluxation. He finds no support for a causal temporality i.e., the consistent presence of a subluxation leading to a predictable outcome, or indeed the reverse. He goes on to report no evidence for a biologically plausible explanation or any analogy that might help to explain the existence of a subluxation. As a basis for reasoned health care there has been little or no epidemiological support. It would therefore immediately come into conflict with any concept of evidence-based practice.

The detection and correction of subluxations would therefore appear to be dogma rather than scientific concept open to examination and refutation. A modern health

profession would reject it as a founding principle (Nelson et al., 2005). The issue here is that a proportion of the profession has not.

2.4.3. 'Straights and Mixers'

The whole history of Chiropractic from its earliest beginnings to the present day is one of conflict between those who hold on to the original tenets of the profession and those who deny their importance and focus on newer explanations of musculoskeletal disorders (Simpson, 2012)). Termed 'Straights' and 'Mixers', i.e., those who use only the 'chiropractic adjustment' as treatment and those who 'mix' it with other modalities such as exercise or massage, these two camps have fought over the custody of the profession since its inception (Ibid). In relation to the term complementary and alternative medicine, the 'straights' offer a non-orthodox explanation for the cause of disease so they might be termed alternative. As the 'mixers' admit to the role for conventional health care, they could be considered complementary.

In a bid to quantify the proportion of the profession who hold to these beliefs, McDonald et al (2004) used a postal survey of 687 North American chiropractors to establish what they termed as broad, middle and focused scope chiropractors. The latter category of 'focused scope chiropractors' emphasise the detection and adjustment of vertebral subluxations. They formed 19.9% of the sample. More recently, a study in Canada reported that 18.8% of their sample view subluxation as an obstruction to health (McGregor et al., 2014). A similar study carried out in Europe, including the UK, found of the 1322 chiropractors who returned their online survey (17.5% response rate), 20.1% expressed 'unorthodox' views (Gíslason et al., 2019). In the UK contingent of this survey, 20% expressed unorthodox views. Whilst these self-reported surveys are open to the criticism of report bias and unrepresentative samples, they suggest a consistent picture of about 20% of the chiropractic population as holding to the concept of the subluxation.

2.4.4. Subluxation as an historical concept

Two of the 3 largest colleges, in the UK , AECC and WIOC, are founder members of The International Chiropractic Education Collaboration (ICEC) (The International Chiropractic Education Collaboration, n.d.) . This holds that “The teaching of vertebral subluxation complex as a vitalist construct that claims that it is the cause of disease is unsupported by evidence” (Ibid p.1). It goes on to say it is only taught in an historical context. As these colleges have the largest number of alumni in the UK, this might imply, at least educationally, that the construct of the subluxation is mostly unsupported.

In summary, surveys would suggest a proportion of about 20% of the chiropractic population adhere to the outdated and unsubstantiated concept of a 'subluxation'. Teaching institutes in the UK describe this concept as 'historical' and 'unsupported'. Whilst it will undoubtedly be a feature of this thesis it will not dominate the discourse.

2.4.5. What do Chiropractors actually do?

Accounts of the practice of chiropractors appear largely as self-reported or telephone surveys. There are very few examples of actual observation of chiropractors. One ethnographic study investigates an American chiropractor's behaviour in his clinic. The emphasis in this case was observing the social meanings of his actions as part of what is described as a 'marginally deviant' profession (Cowie and Roebuck, 1975). Conducted by a sociologist interested in deviant behaviour, this study does not help to understand what chiropractors do.

A phenomenological study in Pittsburgh, USA in the early 1980s observes chiropractors treating patients in an effort to explain the hypothesis of the author that it is more than the manipulative act that explains the success of the chiropractic profession (Coulehan, 1985). This says little about how chiropractors work beyond that they use manipulation and a variety of other treatment modalities.

Hennius reports a case study on a chiropractic clinic in the UK. He spent one day per week between April and July in 2008 observing a chiropractor's

consultations and interviewing patients in the clinic. Hennius interviewed the chiropractor on two occasions. The author also registered as a patient. (Hennius, 2013). Hennius uses no theoretical framework to inform his work or any coding process or any 'strict method of analyses'. His conclusions are not helpful in revealing what therapeutic activities chiropractors do, even in the one he observed.

In countries other than the UK there have been a number of attempts to measure what chiropractors actually do (Coulter and Shekelle, 2005; Mootz et al., 2005; French, Charity, Forsdike, Gunn, et al., 2013; Carlesso et al., 2014; Puhl et al., 2015; Adams et al., 2017; Kvammen and Leboeuf-Yde, 2014; Nielsen et al., 2015). With the exception of the study by Mootz (2005) which reports on data retrieved through a telephone survey in 1999, all the other studies are self-reported surveys. Each one of these studies reports that manipulation is the commonest intervention for most chiropractors. Frequency of manipulation ranges from 83% to 93% of the event measured, either patient visit or patients. Self-reported surveys can be problematic therefore the issues that this methodology presents when interpreting these findings are discussed (see section 2.6).

Manipulation, in its various forms, is the self-reported treatment modality most commonly used by chiropractors. Other interventions include massage, exercise and advice. Beliveau and colleagues in a scoping review listed the treatments described by chiropractors reproduced in **Table 1** (Beliveau et al., 2017). Of note here is the high percentage of SMT provided. This should be compared with 26% of chiropractors who provide exercise advice. This is a scoping review and therefore the studies that they examine are not subjected to critical appraisal. Scoping reviews are traditionally used to probe for gaps in the research or assess the state of what is known about a broad subject (Peters et al., 2015). As such it is useful way to examine this sort of question, but care must be taken when drawing conclusions from its findings.

Table 1: Proportion of Chiropractic Treatment provided. Adapted from Beliveau and colleagues scoping review of 34 articles describing chiropractic practice (Beliveau 2017)

Chiropractic treatment	Percentage of treatment provided (median, IQR)
Spinal manipulation	79.3% (55.4-91.3)
Soft-tissue therapy	35.1% (16.5-52.0)
Formal patient education	31.3% (22.6-65.6)
Nutritional supplements	30.9% (10.8-63.0)
Exercise instruction/prescription	26.0% (9.0-68.1)
Cold/ice	26.0% (9.0-74.0)
Heat	21.8% (12.0-49.0)
Mobilization/Manual traction	17.2% (12.4-32.0)
Orthopedic supports	13.0% (3.0-23.0)
Electrical stimulation	12.7% (7.9-31.0)
Ultrasound	12.5% (6.7-27.1)
Acupuncture	2.4% (6.0-1.8)

2.4.6. What Conditions do they treat?

Limited accurate information is available about what conditions chiropractors treat. Most of this information has been gathered using surveys of chiropractors (Fernandez et al., 2019; French, Charity, Forsdike and Gunn, 2013; General Chiropractic Council, 2004). The GCC asked chiropractors in 2004 if they believed they could treat a variety of conditions and over 90% reported that they could (General Chiropractic Council, 2004).

In Table 2, there is a representation of the percentage of conditions that a

chiropractor treats adapted from the review by Beliveau (2017). Broad agreement appears to exist that Chiropractors overwhelmingly treat MSK conditions. Of them, roughly half are low back pain. This is not surprising. Critics of the profession claim that chiropractors treat non-MSK disorders in line with the original health claims aligned with the notion that the presence of subluxations is the root of ill health (Homola, 2016; Smith et al., 2016; Ernst, 2008). The studies above suggest that the treatment of non-MSK conditions represents a very small percentage of chiropractor's work.

An issue with all of these studies is that they are self-reported. This subject is critiqued in section 2.6.1. We are presuming that these surveys, some of which are random samples of chiropractic cohorts and some of which are convenience samples, access those chiropractors for whom the subluxation theory is uppermost. Random samples contribute to the internal validity of the studies by reducing the possibility of selection bias. It improves the probability that the sample chosen is representative of the population under study (Bowling, 2009, p.203). A convenience sample however increases the risk of selecting participants who reflect a particular characteristic disproportionately. In this case when the sampling is not performed randomly, the chances of the percentage of non-MSK conditions treated by chiropractors might be underestimated because the chiropractors who treat these conditions might be underrepresented in a convenience sample.

Table 2 : Percentage of conditions patients are treated for. Adapted from Beliveau and colleagues scoping review (Beliveau et al., 2017).

Reason for attending care	Percentage of patients (median, IQR)
Low back/back pain	49.7% (43.0-60.2)
Neck pain	22.5% (16.3-24.5)
Extremity problem	10.0% (4.3-22.0)
Wellness/maintenance	7.55% (3.0-14.0)
Hip pain	7.0% (0.8-10.8))
Headache	5.5% (4.0-9.3
Unspecified/miscellaneous/ other	5.0% (2.5-8.0)
Shoulder/arm pain	5.0% (3.8-7.2)
Visceral/non-musculoskeletal	3.1% (1.6-6.1)
Knee pain	2.9% (2.6-5.0)

2.4.7. Chiropractic Attitudes to EBP

Although surveys find a consistent message about what chiropractors report that they do in practice, this still does not tell us a great deal about their interface with

EBP. There are a number of studies that report attitudes toward EBP, and these might help to shed some light. Unfortunately, all but one of the studies are in chiropractic populations outside of the UK. The single study from the UK is a qualitative study (Hall, 2011).

Leach and Gillham (2008) developed a questionnaire specifically for complementary and alternative health professions -The Evidence-Based practice Attitude and utilization SurVEy (EBASE). This survey instrument has been used a number of times to examine this issue in chiropractors (Roecker et al., 2013; Alcantara and Leach, 2015; Bussières et al., 2015; Schneider et al., 2015; Leach et al., 2021). These studies consistently report that chiropractors have positive attitudes towards EBP, regard a lack of time and a lack of relevant evidence as the main barriers to implementation of EBP and highly rate their own skills in EBP. This is consistent with other surveys of a similar type in different health professions (Sundberg et al., 2018; Leach and Tucker, 2018; Veziari et al., 2017; Sullivan et al., 2017). There is however an important limitation to this sort of enquiry. All of them make an assumption that the nature of EBP is clearly understood by the participants. This is explored more in a later section of this review (see section 2.6.1)

Suter developed a piloted non-validated survey of Albertan chiropractors and massage therapists looking into the importance that those profession attach to research (Suter et al., 2007). The participants were volunteers, and the response rate was 33%. The authors make clear that they are using research as a proxy for EBP. They found that chiropractors had very positive perceptions of research but that their use of research was low.

A scoping review was conducted by Bussières and colleagues in 2016 which sought to investigate EBP, research utilisation, and knowledge translation in chiropractic (Bussières et al., 2016). Unlike a formalised systematic review, a scoping review does not include a risk of bias assessment so this paper makes no attempt to assess the quality of the literature it studies (Peters et al., 2020, sec.11.1.2). The work used a thematic analysis to group the papers into themes. It is unclear how this was done or what methodological framework the authors used.

They describe their analysis as 'deductive' presumably to match the themes of the title question. For attitudes towards EBP they mirror the findings above using work already discussed.

Bussières et al includes research utilisation in their search looking at guideline adherence (Bussières et al., 2016). This could be taken as an indication that chiropractors are using and following research and are therefore evidence-based. Some populations of chiropractors adhere to clinical guidelines about low back pain and whiplash (Carlesso et al., 2014; Carlesso et al., 2015; Ferrari and Russell, 2004; Debarle et al., 2014; Amorin-Woods et al., 2014) whilst others depart in nutrition (Smith and Spillman, 2001; Holtzman and Burke, 2007) and the use of radiography (Walker et al., 2011). These studies are all done in populations outside the UK. All of these studies are self-reported surveys.

A survey developed originally by McColl (1998) and then further adapted for physiotherapists by Jette (2003) was used to evaluate attitudes, beliefs, knowledge, skills, and barriers to the use of research in Australian chiropractors (Walker et al., 2013; Walker et al., 2014) This instrument, or variations of it, is used extensively in examining the skills knowledge and attitudes of EBP in other healthcare professions. The response rate in this Australian survey was small hence the generalisability of these findings should be treated with caution. However, they found that chiropractors were generally positive about EBP and interested in learning more about it.

There was some discordance regarding their reported use of EBP with terms that indicated some understanding or ability in critical appraisal of research or 'best evidence'. The survey instrument used in these studies asked about the participants' understanding of words like relative risk, odds ratio and meta-analysis. These studies suggest that participants are positive about the concept of EBP, but do not necessarily feel confident of their skills. This might well indicate that that attitudinal congruence with EBP is not necessarily correlated with an understanding, or knowledge, of the process. Equally, of course, the opposite may be true. It is unclear therefore how conversant health practitioners are with the tenets of EBP from this approach to the answer for this question.

A study by Hall (2011) used semi-structured interviews to explore chiropractors attitudes to EBP. He asks the same four open questions to each of his participants and in each the subject of the question is the word 'research'. This study appears to use research as a proxy for EBP. There is little evidence of triangulation, member checking or audit. A detailed description of these methods might have encouraged a greater sense of what Guba refers to as truth value about the work (Guba, 1981). Journal word limits might have also restricted a reflexive account about how the author, a practicing chiropractor, had engaged with the material. Nevertheless, its subject has some resonance. Hall's main themes centred around the credibility of research, its lack of influence and that it should be used to justify practice. One participant remarks

"I think we should carry on doing what we do and research why it works" (Hall, 2011, p.109)

There is a difference in these themes from those described by the surveys. The emphasis shifts from barriers and skills and relocates to the character of research particularly where it applies to practice. Although this is a small study it suggests the existence of this attitude in a section of the chiropractic population.

To summarise, attitudes to EBP in chiropractic have not been studied extensively worldwide and there is very little work set in the UK. The majority of the studies have used a particular survey instrument and broadly agree that constraints on time and a lack of relevant evidence are a barrier to the uptake of EBP, chiropractors value EBP and consider themselves literate in EBP skills. It is probable that a more exploratory approach might produce different considerations in the light of the evidence from one qualitative study. It will be informative in the next section to investigate how other professions regard EBP.

2.5.What do we know about the relationship between EBP and other Allied Health Care professions?

2.5.1. Occupational Therapy

Attitudes and behavioural responses have been sought in other professions using similar survey-based tools as the ones used to collect data from chiropractors. In Occupational Therapy, Upton and colleagues reported on their systematic review of 23 quantitative, 8 qualitative and a mixed method study (Upton et al., 2014). They used a quality appraisal tool but did not use a specific data extraction method. Two authors worked with the material relying on consensus to arbitrate. This narrative review provided a broad view of attitudes towards EBP and the factors that might affect them. Occupational therapists, they report, have positive views towards EBP and cite time pressures and a lack of relevance of the existing literature and a lack of perceived skills in research as barriers (Upton et al., 2014). Upton and colleagues make the point that several of the studies in their work imply a relationship between attitudes and practice but that this cannot be taken as causal. They suggest that 'socially desirable responding' might play a role in this relationship and future studies might seek to measure this desirability in order to isolate its effect on the results. This may be true of the surveys of chiropractors. This is discussed later in Chapter 4 (see section 4.2.2).

Other studies echo these findings; a number of survey instruments adapted from McColl (see section 2.4.7) have been applied to New Zealand, Swedish and Chilean occupational therapists (Graham et al., 2013; Garcia et al., 2020; Lindström and Bernhardsson, 2018). They found positive attitudes towards EBP and that therapists feel it is necessary for the practice of occupational therapy. Barriers to implementation of EBP included a lack of time, a lack of perceived skill in applying research evidence to practice as well as a disconnect between relevant research and practice.

Thomas et al (2020) developed and validated their own survey from 5 existing tools (Al Zoubi et al., 2018). They concluded that positive attitudes in newly qualified

Occupational therapists (and Physiotherapists) correlated with the use of EBP.

2.5.2. Physiotherapy

Two systematic reviews of physiotherapist's attitudes to EBP cover work from 2001 through to 2014. Both outline the knowledge, skills and behaviour, opinions and barriers related to EBP (Mota da Silva et al., 2015; Scurlock-Evans et al., 2014). A number of studies in the earlier systematic review were not included in the latter one despite having very similar inclusion and exclusion criteria. Nevertheless, both studies describe similar findings related to physiotherapist's positive attitudes towards EBP. With regards to knowledge of EBP, there is a good level of general understanding which reduces when becoming more specific. For example, physiotherapists rated their self-efficacy in research and appraising literature as mid to high (50 to 80%), but critical appraisal of psychometrics and statistics as low (<50%) (Jette et al., 2003).

A common barrier to the implementation of EBP are the constraints of time. Chiropractors cited of a lack of time also but a significant barrier for them was the relevancy of the research to their practice. This was also present in some of the physiotherapists who found it difficult to apply research to practice (Barnard and Wiles, 2001). The Mota da Silva review did not adhere to PRISMA guidelines but did however use a rigorous system for assessing the risk of bias, two reviewers with a third for resolving disputes and a transparent search strategy (Mota da Silva et al., 2015)

Both reviews concentrate on cross-sectional self-reported surveys and therefore are open to the same considerations mentioned earlier regarding the Chiropractic surveys (see section 2.4.7). Confidence in computer skills is mentioned as an important facilitator for EBP (Scurlock-Evans et al., 2014). Technology availability has developed considerably over the last decade or so and this might be a reason that earlier studies reported this as a barrier. It is also possible that availability rather than skill regarding technology might have been the issue in the earlier studies

reviewed.

2.5.3. Phenomenological perspectives of Physiotherapists and EBP.

An important contribution to the debate over physiotherapists relationship with EBP has been made by Igo (2015) in his phenomenological study of physiotherapist's use of EBP. He explores 3 themes that developed from semi-structured interviews with 12 physiotherapists who represented a broad cross section of the specialty. They were;

A personal theory of EBP

Translating evidence into practice

The impact of intra-personal, social and cultural milieus on EBP behaviour

He suggests that the relationship physiotherapists have with evidence maybe a complex mix of external factors, such as an organisational culture, and a personal understanding of being and knowing. Evidence is subsequently used in an instrumental, conceptual or symbolic way.

In common with the qualitative exploration of chiropractors attitudes to EBP by Hall (2011), Igo bypasses the traditional themes that emerge from self-reported surveys and a richer more nuanced view of the relationship of one group of professionals with the paradigm is suggested. The idea of a personal theory of EBP might for example suggest a re-evaluation of a familiar call to identify what counts as evidence (Bolton, 2001). It might be that 'what counts' is unique for each practitioner and each clinical interaction. If each professional has a personal ontological and epistemological view of the evidence as they see it, evidence produced in one paradigm might not be meaningful as a basis for clinical decision making. Seeing evidence as 'all about the patient', 'all about the evidence' or 'all about the therapist', Igo claims, is a novel way to describe physiotherapists approach with EBP. It might also suggest that viewing EBP in physiotherapists as a single entity which has a 'correct' and an 'incorrect' way in which to be applied is too simplistic.

Igo makes no attempt to suggest which approach has more efficacy or which relates 'better' to EBP. Nevertheless, implicit in his findings is that evidence in MSK physiotherapists is treated as a singular concept when perhaps this is not the case. EBP could be viewed as a much more complex interaction than is generally assumed because evidence, as thought of by these physiotherapists, is contextual and can be seen from different perspectives. The patient may have a very different idea about what counts than the practitioner.

The idea that different types of evidence might apply to different situations has been raised before. Rycroft and colleagues (Rycroft-Malone et al., 2004) make the claim that effective EBP will only be delivered if a broader concept of evidence is considered. However, there is a subtle difference in suggesting that there are different types of correct evidence out there with the idea that multiple sources of incompatible evidence can be fused together in a clinical interaction by health workers. Of course, from this work we cannot claim that this fusion is effective, but we can claim it exists, at least in this small population of physiotherapists. It sensitises us to look for these traits in other populations of health workers, chiropractors for instance.

Igo's study identified similar barriers to EBP as other studies (Heiwe et al., 2011; Iles et al., 2006; Jette et al., 2003; McColl et al., 1998; Upton et al., 2012). Where Igo's study differs is suggesting a demarcation between an internal and external source for these barriers as well as a complex interaction between the two.

2.5.4. Osteopathy

A number of surveys of osteopaths help to inform thinking about their attitudes and beliefs towards EBP (Weber and Rajendran, 2018; Sundberg et al., 2018; Leach et al., 2020; Adams et al., 2018; Fernández-Domínguez et al., 2020). They use two of the survey instruments that have been used in assessing chiropractic attitudes and a third which has been developed specifically for the purpose. There is one qualitative study (Figg-Latham and Rajendran, 2016). This literature echoes the methodical approach to measuring attitudes in chiropractors where quantitative

measurement using survey instruments dominate.

The survey performed by Weber and Rajendran use the Jette survey (2018). The surveys by Sundberg (2018) and Leach (2019) use the EBASE survey. Weber and Rajendran (2018) and Sundberg (2018) had powered, non-random samples of the UK osteopathy population. Both reflected the findings in the chiropractic population by identifying that osteopaths broadly supported the use of EBP and deemed it necessary for the practice of osteopathy. They found that the main barriers to using EBP was time and a lack of relevance of published research to the practice of osteopathy.

In Australia, the EBASE survey has been used by Leach et al (2019) and a workforce survey performed by Adams et al (2018). Leach reports that Australian Osteopaths mirror their UK counterparts in generally supporting the use of EBP. They also regard their self-perceived skills in EBP as moderate to high and the barriers to the use of EBP as time and the relevance of the research to their practice. The Adams workforce survey of Australian osteopaths reduces the term of EBP to research and makes assumptions in the formation of its questions. They ask in three different ways if the Australian osteopath disagrees or agrees that research is useful in demonstrating the efficacy of their practice. This reveals little about osteopaths' attitudes or beliefs about EBP and more about the impact of research in their practice.

The survey by Fernandez-Dominguez et al (2020) of Spanish osteopaths attempted to uncover the characteristics that are significantly associated with osteopaths who are evidence-based. They had earlier validated their survey (Fernández-Domínguez et al., 2016) . The sample was large enough to be powered and was non-randomised. There were no baseline characteristics given for the wider Spanish osteopathic population, so it is difficult to assess their representativeness. No English translation of the survey has been published so access to the questions used was not forthcoming. They managed to align certain populations of osteopaths to certain characteristics identifying the group with the highest adherence to the principles of EBP. These included genders (male), an academic degree, EBP

training, time spent working in healthcare, research and teaching activity, and working with an accredited educational centre. They claim that organisational factors appear to not be associated with barriers to the use of EBP. This is a departure from the studies examined so far. In the studies outlined previously a frequently mentioned barrier to the implementation of EBP is a lack of time which can be interpreted as an organisational failing.

Figg-Latham and Rajendran (2016) used a grounded theory informed approach to explore the use of guideline recommendations in osteopaths in the UK. Guidelines can be seen as the distillation of the 'best evidence' domain of EBP. He used clinical tutors and students as his subjects. This may mean that his study fails to embrace the broadest expression of this phenomenon in the profession as he does not include any practicing osteopaths. He develops a theme of the 'precedence of osteopathy'. They note that their sample of osteopaths have limited regard for population-based research. One of their participants says;

"So, I think there is an in-built flaw in doing that ... maybe there is another way to do research, you know clinical trials, double- blind which is considered to be the best way of researching. I just don't think it is applicable to osteopathy..." (Figg-Latham and Rajendran, 2016, p.103 Quote 4.5).

The themes in this study are analogous to some of the findings of Hall in his qualitative exploration of chiropractors attitudes to EBP (Hall, 2011). Both papers recognise that their participants have a discordant view of research where it is both influential and yet somehow does not apply to their practice.

In summary, the principal way that the question of defining the attitudes beliefs and knowledge health care workers have about EBP is addressed is by using several types of self-reported surveys. Other methods have been used to tackle this question less often. The surveys share common results. This commonality may help to bolster their claims or conversely indicate that they are finding the same results because they are asking the same questions. In osteopathy, physiotherapy and occupational therapy the studies described above support the concept and use of

EBP yet find it difficult to find the time to apply it and regard its relevance to practice as limited. There is some evidence to suggest that education level may be associated with a positive attitude towards EBP although it is not demonstrated across many professions.

2.6. What are the issues with the current state of knowledge and where are the gaps?

The sections above looked at examining potential answers to how chiropractors' interface with EBP. This question has also been looked at in other professions. In the following section, the difficulties with these approaches will be outlined.

2.6.1. Assumptions and the self-reported survey

A greater part of the evidence above was derived from quantitative cross-sectional surveys. The advantages of a self-reported survey include flexibility of the subject under study, low cost, ease of access to participants, and it can also generate hypotheses from descriptive data. The disadvantages include the inability to establish causal mechanisms, dependence on high response rates for generalisability, volunteer bias and self-report bias (Bryman, 2016; Hickson, 2008)

The EBASE survey designed by Leach and Gillham (2008) asks their participants to outline their attitudes towards EBP. It uses questions such as "On a scale ranging from strongly disagree to strongly agree, how would you rate your opinion on the following statements?" and then gives a number of statements. Two of these are "EBP is necessary in the practice of Chiropractic" or "EBP improves the quality of my patients care" (Schneider et al., 2015). In her survey developed for physiotherapists and used in chiropractors, Jette's first question asks the participants to tick a box on a Likert scale indicating how much they agree with the statement "Application of EBP is necessary in the practice of physical therapy" (Jette et al., 2003).

Using self-reported surveys in this context assumes that the participants have an accurate idea of the nature of EBP. Even if a narrow view of EBP is taken - one where EBP is the searching for, finding and analysing of quantitative research - it is possible that health care workers have an incomplete understanding of the concept. Condon and colleagues in a scoping review investigated the ability of physiotherapists to undertake steps regularly used to “assimilate scientific evidence” and to teach how to be evidence based. They suggest that assuming how much physiotherapists understand EBP or engage in it, is poorly understood (Condon et al., 2016). This is a scoping review and therefore does not assess the quality of the studies it reviews so further work is needed. His findings however mirror studies in chiropractors. He reports a belief among physiotherapists of the benefit of EBP, as do studies of chiropractors (Roecker et al., 2013; Alcantara and Leach, 2015; Bussi eres et al., 2015; Schneider et al., 2015; Leach et al., 2021). It has been noted how a similar pattern of findings are emerging from this type of enquiry across all the health care professions. If chiropractors report the same liking for EBP, it is therefore possible that, in common with the physiotherapists in Condon’s study, chiropractors might not have a full understanding of EBP.

Leach’s survey also asks questions about how participants would rate their skills in ‘critical appraisal of the evidence’ or ‘synthesis of research’ (Schneider et al., 2015). Both these concepts require some understanding and considerable time is spent in postgraduate teaching in health care to instil them into students. Studies have shown that there is poor correlation between healthcare students self-reported assessment of their understanding of these concepts and their actual grasp of the competency (Aguirre-Raya et al., 2016; Murphy et al., 2019; Lai and Teng, 2011; Snibs er et al., 2018)

Another example of this can be seen in Suters paper described above (Suter et al., 2007). Thirty percent of chiropractors in that study said that they always apply research to their practice whilst 66% said they sometimes do. Another question found that none of the chiropractors used the Cochrane Database of Reviews “frequently” and only 9% used it “more than once a month”. Sixty-three percent reported using websites as sources for research-based information. Using websites

for research information might suggest a lack of understanding of the requirement for validity in research. If chiropractors are looking at websites rather than established databases such as Cochrane it may suggest that their grasp of what constitutes valid research is limited.

Others have noted this before (Saunders and Vehviläinen-Julkunen, 2018; Saunders et al., 2019). In healthcare students there have been several studies looking at the correlation between attitudes and competency in EBP (Snibsøer et al., 2018; Lai and Teng, 2011; Murphy et al., 2019; Aguirre-Raya et al., 2016). Mahmood finds poor correlation in his Systematic review of information literacy (Mahmood, 2016). There is general agreement that attitudes towards EBP, which are broadly positive, do not necessarily correlate with actual competency in the basics of EBP.

Saunders (2019) suggests the use of validated EBP tools such as those developed by Ilic et al or Spurlock to assess the knowledge of competencies in healthcare workers (Ilic et al., 2014; Spurlock and Wonder, 2015). They point out that, as EBP is a shared competency across all healthcare professions, a single validated tool would be helpful. It would underline the findings of the surveys mentioned above if a full understanding of what is actually meant by EBP by healthcare workers, including chiropractors, could be demonstrated.

In summary, the use of the self-reported survey to investigate this question suffers from the criticism that it makes assumptions about the understanding of participants. This can lead to overstating conclusions.

2.6.2. Testing a version of EBP

Evidence-Based practice is not simply the evaluation of quantitative research. Surveys such as those above, appear to make the 'evidence-base' of EBP the mainstay of this paradigm. The assumption here is that knowledge of, or interaction with, the critical appraisal of quantitative science is sufficient to declare that practice is evidence based. This is an assumption that was addressed early in the

development of EBP and has been challenged again more recently (Sackett et al., 1996; Greenhalgh et al., 2014).

In summary, chiropractic worldwide shares similarities with other allied health care professions with regards to their attitudes and behaviours towards EBP. Very little of this work has appeared in the UK. There is a concern that regardless of their answer, asking a professional if they are evidence based might not accurately measure their understanding of the term or their ability to be evidence based. Information gained from this sort of technique therefore may be open to misinterpretation when applied to the question of how chiropractors engage with the concept of EBP.

2.7. What other theories help us understand the issue?

In this section some of the other theories that might help to understand how chiropractors engage with the concept of EBP will be explored. It may be that chiropractors do not really understand what EBP is so simply asking them if they are engaging with a concept about which they have an inaccurate understanding might not help. It might be helpful to look at how EBP has been approached in other professions using different approaches.

In medicine, an ethnographic study of two general practitioner (GP) practices looked at ways that “the social and organisational processes by which evidence, information, and knowledge—tacit or explicit—become transformed into knowledge in practice.” (Gabbay and le May, 2004, p.1013). This appears to directly address the question of this thesis albeit in GPs. It attempts to identify the processes by which GPs make decisions and in so doing explore their relationship to the knowledge that it is presumed they need to carry out their duties.

Gabbay and Le May found that in these practices, the propositional knowledge so privileged by EBP was rarely consulted or drawn upon (see section 2.2 for a definition of propositional knowledge). Rather it was the communities of practice

evident within each workplace that informed their decision making. These communities were iteratively interacted with in a variety of ways with brief reading, conversations and observations. Guidelines were seldom referred to and the well-established process of discovery of evidence-based information using the common 'Ask, Acquire, Appraise, Apply and Assess' method suggested by Strauss (2011) was notable by its complete absence. Clearly, in the GP practices they studied, there appeared to be a process of delivering care that did not base itself in the traditional methods of accessing guidelines and yet was alleged to be guideline adherent. (Gabbay and Le May do not say why the practices they observed were 'highly regarded'; it is possible that highly regarded or not, they were not evidence-based). The authors referred to this as using 'mindlines' which they described as "collectively reinforced, internalised tacit guidelines, which were informed by brief reading, but mainly by their interactions with each other and with opinion leaders, patients, and pharmaceutical representatives and by other sources" (Gabbay and le May, 2004, p.1015).

The approach Gabbay and Le May use could be applied to the question of how chiropractors' interface with EBP. This study illuminates the interaction of GPs with the evidence that they are practising in novel ways. Using observations and interviews, Gabbay and Le May were able to triangulate their findings, exploring verbally the phenomena that they had witnessed first-hand with observation. They explored how doctors interfaced with the evidence needed to work in a guideline adherent manner and formed a theoretical explanation. This approach could be used in chiropractic and so far, has not. The ethnographic study by Hennius of one chiropractor observing another is mostly descriptive and not large in scale (Hennius, 2013). However, it does offer a suggestion about how the interface of chiropractors and EBP might be explored more fruitfully.

2.7.1. Theories in relation to Clinical Reasoning.

In an allied health professional setting, clinical reasoning has been defined as "a context-dependent way of thinking and decision making in professional practice to

guide practice actions” (Joy Higgs et al., 2008, p.4). It is also apparent that there are many different interpretations of this process and there may be no single way that health care professions address this concept (Huhn et al., 2019; Norman, 2005; Higgs and Jensen, 2019). Based upon Higgs description, it would appear therefore that clinical reasoning and EBP have similar aims. Elsewhere Higgs describes the difference between EBP, and clinical reasoning lies in the definition of knowledge. She maintains that clinical reasoning holds to a wider definition of practice knowledge (Higgs, Richardson, et al., 2004, p.194). The traditions that have been spoken about earlier would seem to bolster her claim (see section 1.6). EBP often takes knowledge as solely generated by quantitative science. However, if EBP is more than simply quantitative research then this differentiation may be challenged. She goes on to say,

"In order to cope with the complexities and uncertainties of clinical practice we contend that clinical reasoning needs to be seen as a pivotal point of knowledge management in practice, utilising the principles of evidence-based practice and the findings of research *but also using professional judgement* to interpret and make research relevant to the specific patient and the current clinical situation." (My Italics Ibid p194)

EBP, from its earliest incarnations, included professional judgement in the guise of clinical expertise so it is difficult to see the difference in these two positions. In an opposing view, Loftus thought that clinical reasoning needed to take full account of the different forms of knowledge. He claimed that EBP had already done so with Sackett’s initial definition which included clinical expertise (Loftus, 2012).

With the similarity, or at least the confusion about the definitions of EBP and clinical reasoning, it is possible that something may be learned about how to approach the thesis question by looking at how clinical reasoning in chiropractors has been studied.

Unfortunately, there is little work on the nature of the relationship between chiropractors and clinical reasoning. One study by Eilayyan et al (2018) was set in a

University chiropractic clinic in Canada. Using several surveys and focus groups they estimated students' and tutors' attitudes towards and self-reported use of EBP behaviours and tried to identify potential barriers and enablers to using self-management support for chronic pain. Using a survey designed for medics and untested in chiropractors, the attitudes and self-reported skills in EBP reflect previous findings. The focus groups however used the Theoretical Domain Framework (TDF) to help organise their enquiry around implementation (Cane et al., 2012). The surveys offer nothing new but the use of focus groups using the TDF explored some of the reasons behind the facilitators and barriers of the use of EBP in chiropractic interns. In tutors the barriers were 'knowledge, skills, environmental context and resources, and emotion'. In students they were 'beliefs about capabilities; memory, attention & decision making; and social influence. Eilayyan and colleagues mapped these findings to suggested Knowledge Translation (KT) strategies, including webinars, vignettes and opinion leader support, to propose a theory-based plan for delivering evidence-based implementation. This approach offers a method for developing KT strategies in chiropractors, but it does not reveal a great deal about how chiropractors interact with the evidence around this topic rather it reveals that they are positive about the evidence and lack the time and organisational knowledge to implement it. This is a recurring theme.

2.7.2. Osteopathy and Clinical Reasoning

Work has been directed at this topic in Osteopaths with a qualitative study using grounded theory by Thomson and colleagues (Thomson et al., 2014b; Thomson et al., 2014a). This work was based on Thomson's PhD thesis. It develops a theory of the clinical decision making and therapeutic approaches of osteopaths. Thomson, who observed and interviewed 12 osteopaths seeing a patient, uses the tension between 'Technical Rationality' and 'Professional Artistry' (Schon, 1983; Fish and Coles, 1998) as a theoretical framework with which to situate his thinking. He describes these as 'Conceptions of Practice' and demonstrates how far influencing factors in his participants situate them toward either rationality or artistry. Two of the factors of influence are the epistemology of practice and theory practice relationship. Both of these ideas are central to the way a musculoskeletal (MSK) therapist might

address EBP.

He went on to use these conceptions of practice to suggest that the way these practitioners interact with their patients is bound up in their own identity as an osteopath and the foundations of their epistemological views. His enquiry suggests that some osteopaths might be practising in a way that is more patient centred than others and this can be viewed in the light of the practitioner's adherence to a technically rational approach or professional artistic approach to their work.

Thomson develops a theoretical proposal. He states;

“The findings from this study suggest that participants held differing views of the purpose and practise of osteopathy. How these views and assumptions of osteopathy were enacted, shaped practitioners' clinical actions, decisions and resulted in different therapeutic approaches to practice” (Thomson et al., 2014b, p.49)

This approach to the question of how osteopaths engage with clinical reasoning and decision making has great merit if applied to the question of chiropractors and their engagement with the concept of EBP. Thomson, speaking about a related subject, uses a qualitative approach to explore the phenomena in detail and comes to a conclusion about some of the driving factors. He uses grounded theory to build a theoretical understanding of clinical reasoning in osteopaths. The same might be a suitable approach for the examination of the relationship that chiropractors have with EBP.

2.7.3. Physiotherapy and Clinical Reasoning

Clinical reasoning has received considerable attention in Physiotherapy. Clinical reasoning strategies have been developed over a period since the late 1980s having first been proposed by Jones (1987).

Strategies developed by Jones (1987) and subsequently expanded situate reasoning by physiotherapists into categories which assist the therapist to address a particular part of the issue in front of them (Jones et al., 2019). They also refer to 'hypothesis categories' to make judgements about the information they gain in the care of the patient (Jones et al., 2019, p.253).

For example, a patient with lower back pain might consult a physiotherapist who begins with creating a full understanding of the issue, taking care to examine the patient's back using a hypotheticodeductive reasoning process to test and refute their hypothesis about the cause of the pain. In doing so they would use hypothesis categories about the patient's pain type or activities and participation that would inform their thinking. Additionally, a physiotherapist might use a narrative reasoning strategy to establish the patient's relationship to their physical disability. This is a subjective exploration of some of the reasoning behind the suffering and might uncover the patient's (and the therapist's) expectations of progress or disability.

This makes the process appear linear and categorical as if each is separate and easily defined. Edwards (2004) in his work showed that physiotherapists seem to flit effortlessly and tacitly between these two positions.

Much of the work in this field has been performed using a qualitative approach. Often there is an observation of a real or simulated case with "talk aloud" commentary from the participant or simply observation followed by interviews (Hartholt et al., 2020; Widerström et al., 2019; Thackray and Roberts, 2017; Langridge et al., 2015; Holdar et al., 2013; McGinnis, Patricia Q.Hack, Laurita M.Nixon-Cave, KimMichlovitz, 2009; Smart and Doody, 2007; Edwards et al., 2004; Doody and McAteer, 2002; Jensen et al., 2000). The data is then analysed using a variety of qualitative methodologies to build a theoretical perspective. An example of how this theory might be integrated is shown in **Figure 2**. An overarching approach to the clinical encounter (biopsychosocial model) informs clinical reasoning strategies (Diagnostic and Narrative reasoning) with the interaction of hypothesis categories in a patient with low back pain.

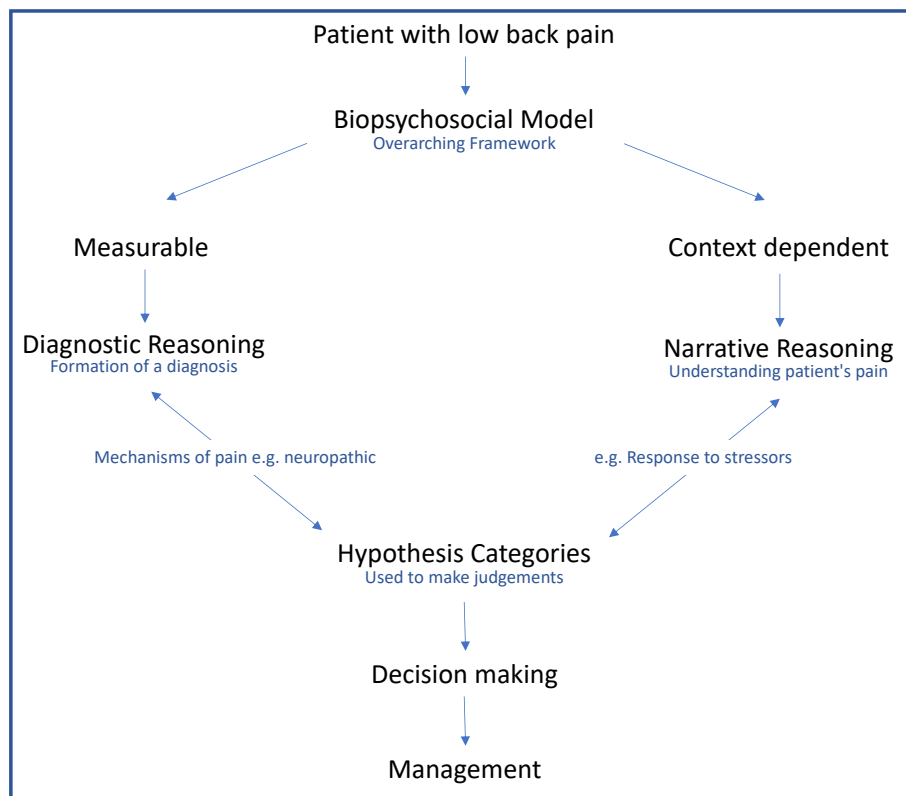


Figure 2: A schematic of the proposed process of clinical reasoning in physiotherapists using an example of diagnostic and narrative reasoning and the relationship of two hypothesis categories for a patient with low back pain (more categories might exist) (adapted from Jones, Edwards and Jensen, 2019)

The work on clinical reasoning in physiotherapy demonstrates that there is a fruitful line of enquiry to be made by observing and enquiring of therapists about how they use cognitive processes to interact with the essential business of their craft. The overlap with the domains of clinical reasoning and EBP suggest it may be possible that this approach yields better results in chiropractors than simply asking them in a survey about how they feel about EBP.

2.8.Importance of the research question

More information about the stance that chiropractors have regarding EBP will help educators and regulators, stakeholders (patients and patient groups), existing

health care frameworks, for example the NHS, researchers and finally chiropractors communicate with and understand how the profession might interact with the orthodox health care provision of the nation in a UK context.

There is a growing nationwide educational programme for chiropractors. The number of chiropractic courses in the UK has increased from 3 to 5 since 2013, when this study began (General Chiropractic Council, n.d.). As Universities plan and develop these new courses, the results of this enquiry may help them in the design of their curricula. The GCC approves higher educational institutions (HEIs) to qualify chiropractors. Sight of these findings might inform their reregistration process and change the standards all chiropractors are asked to meet before qualification. EBP has, at least as part of its requirement, an interpretation of the bank of knowledge HEI's are trying to impart and the GCC is overseeing. Patients should know how chiropractors view this knowledge and which epistemological stance they take. If the findings of this study indicate that these chiropractors are using an appropriate epistemological stance to appraise and critique their bank of propositional knowledge it might help them develop that trust.

If the NHS had more information about chiropractors and their approach to the healthcare of patients, they would be able to make informed decisions about their exclusion or inclusion from existing pathways of care. Better research into how chiropractors relate to EBP will not only enable this but help inform future research. With this phenomenon better understood, further research can use this as a basis upon which to build, add to or shape the theoretical ideas developed.

Finally, Chiropractors themselves will benefit from a better understanding about how they work with EBP. For some of course there will be little point in being aligned to such a paradigm when they perceive it to represent the overbearing authority of an allopathic view of health and disease (Kent, 2008). Nevertheless, for the majority of chiropractors who do not hold such views the findings may inform their thinking (McGregor *et al.*, 2014; Gíslason *et al.*, 2019)

2.9. Summary

Evidence-based practice is a regulatory requirement of chiropractors (General Chiropractic Council, 2010). There is some exploration of chiropractor's attitudes, beliefs and self-reported behaviours towards EBP using survey instruments. These report that chiropractors value EBP but feel that they lack time and some expertise to properly engage with the paradigm. Some other healthcare professions report similar findings using similar methods of data collection. A basic critique of this work is that being self-reported, it suffers from the bias that all such studies carry but more seriously that there is a general assumption that the participants have a full understanding of EBP and can define it accurately before answering questions about their own engagement. Therefore, the question about how chiropractors engage with EBP is not fully explored.

There are different traditions of EBP and clinical reasoning however they both blend practice knowledge with scholarship to inform healthcare decisions. In clinical reasoning there has been fruitful investigations attempting to uncover the strategies used by therapists towards decision making using a qualitative approach (Thomson et al., 2014a; Mattingly, 1991; Gabbay and le May, 2004). There have been no qualitative studies of chiropractors use, experiences or engagement with clinical reasoning or EBP. Taking a cue from studies of clinical reasoning in other professions, a method exploring this question about chiropractors was formed. Using the underpinning research strategy that these studies adopt; a constructionist approach would provide the possibility of a deeper understanding of the interface that Chiropractors have with EBP.

2.10. Aims and Objectives

An adequately developed and explored theory of how chiropractors use and think about the evidence for their everyday practice does not exist. To understand how chiropractors' interface with EBP therefore, an exploratory approach will be best suited to establish some of the characteristics of this relationship. In the light of this,

the aim of this study is to explore the interface between evidence-based practice and chiropractors in practice in the UK.

To achieve this aim, the objectives set will be as follows:

- Using non-participant observation and interviews, establish the participants understanding of the term evidence-based practice.
- Using their definition of the term, explore and describe the nature of their relationship with EBP and how they relate this to practice.
- Having articulated the relationship these participants have with EBP, explore the implications for the profession, future research and education.

3. Chapter 3: Methods Chapter

3.1.Introduction

In Chapter 1 a broad statement of the problem was made. In Chapter 2 a search for an established framework or theory that might help to explain this phenomenon yielded little that might help describe or explain this dissonance. As a result, the question ‘what is the interface between chiropractors and evidence-based practice?’ is posed.

Having established the question, this chapter will outline the paradigm, methodology and method that might be appropriate to answer it. In so doing it explores the theoretical assumptions underpinning the design of this study. It describes the factors which govern the philosophical approach, the methodology and the methods used. This is done in two parts; Part 1 gives an outline of the philosophical choices made using a research framework suggested by Blaikie (Blaikie, 2007). In Part 2, a justification of the methodology chosen to inform the collection and analysis of the data is given. A description of the methods used to achieve the objectives of the study follows.

3.2.Research Choice - Part 1

In order to guide the development of this research, a framework developed by Blaikie was used to critically examine and justify the research approach (Blaikie, 2007). A schematic which demonstrates the research choices he outlines is shown in **Figure 3**. Blaikie’s framework enables a sequential discussion when coming to conclusions about the choices needed to answer a research question, choices that he remarks are not straightforward (Blaikie, 2007, p.5).

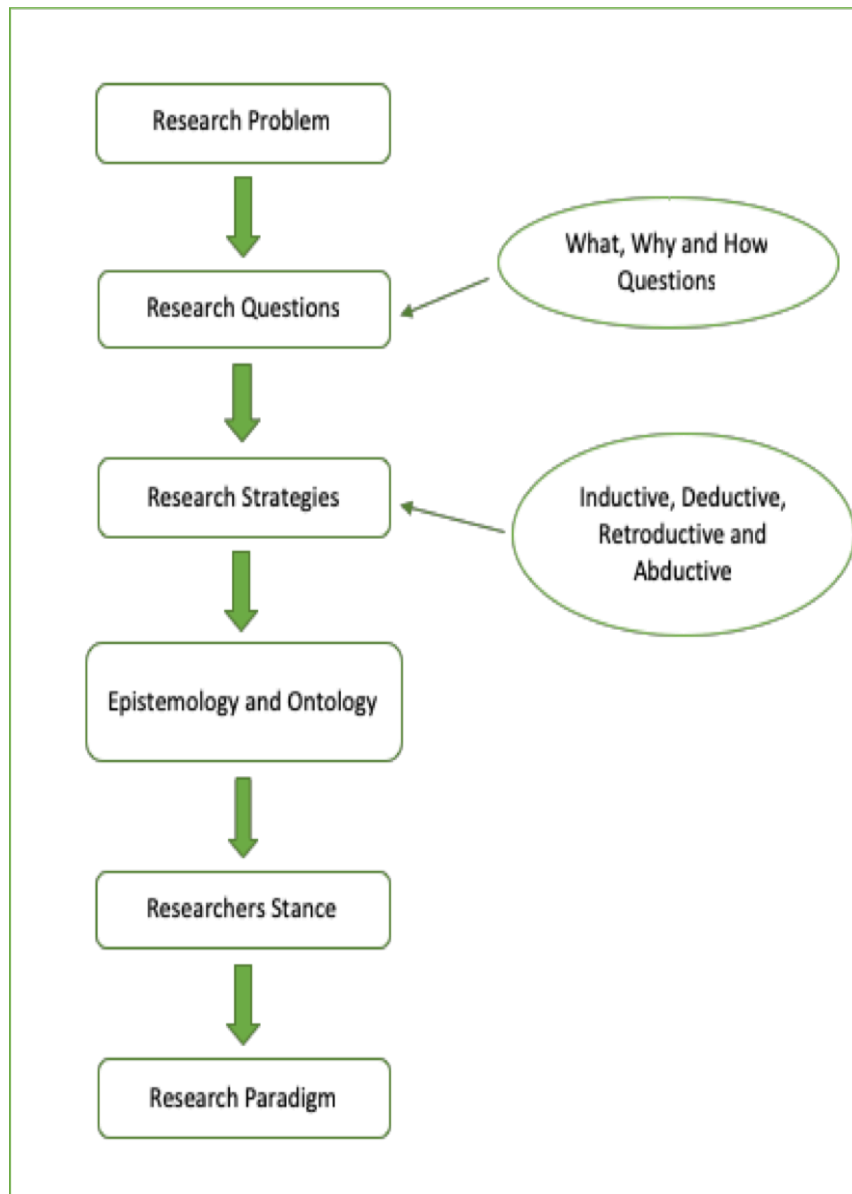


Figure 3: Research Choices when formulating a question and method. (Adapted from (Blaikie, 2007, p.27))

3.2.1. The Research Problem and the Question

The last two chapters developed both the problem and the question. They bear repeating here. In brief, the problem is the dissonance between the state of the ‘best evidence’ regarding common modalities used within chiropractic and the regard that chiropractors seemingly have for them. It is puzzling and not obvious how a profession that for the most part holds that EBP is useful translates that desire into practice. The only information that informs this problem are self-reported surveys

asking chiropractors about their attitudes and beliefs about EBP. This left some uncertainty about how chiropractors actually engage with EBP and therefore a question has been posed - what is the interface between EBP and chiropractors in the UK?

3.2.2. Research Strategy

Research strategies as Blaikie describes them, are the choice of logic used in the enquiry. Establishing the type of logic appropriate is essential to guide the choice of the methodology and methods later. Traditionally there have been two basic positions; inductive and deductive reasoning (Chalmers, 1999). Induction attempts to develop linkages and explanations from observations whilst a deductive logic tries to test theories and explanations already developed (Bryman, 2016).

The question and suppositions above does not ask us to test a hypothesis, nor does it ask us to make comment or devise conclusions about an existing theoretical position regarding chiropractors and their interface with EBP. It asks instead that we make observations and ask questions in order to develop ideas about how these data might link and come together to form a collection of related concepts. These concepts might then be arranged to form, or add too, a theoretical explanation. We are not trying to fit the data into any a priori theory (Braun and Clarke, 2006). Therefore, the research strategy for this study employs an inductive logic.

Whilst it is inductive, and no a priori framework is claimed, this is not to overlook the contextual and situated position of myself as researcher. I have pre-existing ideas about the questions I am asking, and the observations I am making, some of which will be relevant and some of which will (at least appear to) be irrelevant. Regardless of an inductivist's best intentions, there will always be assumptions that they make about which observations to record. The real world is so full of variables, that to examine them all exhaustively and isolate their relationship to the question, appears a near infinite task. In other words, I might note whilst observing if the chiropractor is wearing a uniform, but not what type of door handle the consulting room has. I make judgements always about what is relevant material, and that which

might most probably, or most plausibly, impact upon my conclusions. (Gorham, 2009, p.66)

3.2.3. An Epistemological and an Ontological demand

It has been established that an exploratory approach to the question is appropriate. Stebbins defines exploratory research as

“ a broad-ranging, purposive, systematic, prearranged undertaking designed to maximize the discovery of generalizations leading to description and understanding of an area of social or psychological life.” (Stebbins, 2001, p.4)

These are the questions beginning ‘what’ or ‘how’ or ‘when’ rather than ‘why’. He goes on to identify this exploration as necessarily one of ‘unfolding’ enquiry encouraging the researcher to be ‘open minded’ and ‘flexible’ and to uncover understanding wherever it may be found. He firmly plants this endeavour as inductive reasoning. In terms of this study, the relationship that chiropractors have with EBP is untested and unexplored. It is expected that the method will uncover something of the nature of this phenomenon, but how that will present itself will ‘unfold’ during the investigation.

An inductive strategy is the guiding logic of this study. There remain certain ontological and epistemological implications although it is sometimes difficult to discuss these two separately (Crotty, 1998). The assumptions made in this study are made clear below. These are the assumptions about the nature of social reality and the way in which knowledge of this reality can be gained (Blaikie, 2007, p.13).

Ontology or ‘the study of being’ is concerned with the ‘nature of existence’ (Crotty, 1998, p.10). In this study the ontological position reflects one where the facts of this case might not be universally available or independent of the researcher who gathers them. It might also suggest that the facts of this inquiry might be different depending on how the questions are asked, when the questions are asked and in what context they are asked. It assumes that social reality is the combination of meanings of actions and the contexts in which these meanings are generated. Unlike

a positivist position where facts and social realities have an independent existence, the ontology associated with this study and a constructionist perspective embraces the existence of a reality determined not simply by a demonstration of the senses but an interpretive act by the actors involved (Blaikie, 2007).

Leading on from the positions in ontology, epistemology in research is traditionally split into two camps. The first is a positivist stance where knowledge is seen as observable, quantifiable, independent and value free. The second is social constructionism (Flick, 2014, p.76). This is where knowledge is seen as co-constructed between the researcher and researched, the context, time and social and cultural norms within which it is experienced.

Epistemology, or how we know what we know, in this context suggests we may not gather the fullest understanding by simply testing these chiropractors using an instrument such as a preformed survey. This might too heavily reflect the researcher's assumptions - for example that chiropractors know what evidence-based practice is (see section 2.6.1). In other words, this gathering of information - creating and generating new knowledge and understandings - cannot be untainted by the assumptions or values of the researcher.

These epistemological and ontological positions together reflect what can be termed a constructionist or interpretivist position (Lincoln and Denzin, 1994). This is in distinct contrast to a positivist or postpositivist paradigm. From this point of view therefore, if the knowledge obtained from this study cannot help but be tainted by the researchers' values and preconceptions, a positivist interpretation would be incongruent. A purely constructionist stance might suggest that any knowledge produced in this sort of setting is one co-constructed by both the researcher and the researched, bound by the values and context in which the knowledge was demonstrated (Lincoln and Denzin, 1994, p.111).

3.2.4. Researcher's Stance

The researcher stance in this instance refers to the “relationship between the researcher and the researched” (Blaikie, 2007, p.11). This is pertinent mainly because of my identity as both researcher and chiropractor.

In ethnographic terms this would be regarded as ‘emic’ or being an insider, a key component of qualitative research (Speziale and Carpenter, 2007). As a chiropractor, I am exposed to, and part of, the culture of that profession. And whilst I might not be actually working with my participants in the delivery of their care, it would be incorrect to describe my interaction in this setting as an outsider. Bradshaw, Atkinson and Doody (2017, p.2) describe this ‘emic-ness’ as an underpinning position of qualitative description which applies equally well here;

“An emic stance (an insider view which takes the perspectives and words of research participants as its starting point) but is influenced by the researcher not only because of subjectivity but also when a degree of interpretation occurs”.

This is relevant because it includes the role of the researcher as an integral part of the interpretive result. My role as an insider - a chiropractor - ultimately influences the interpretation I make of my observations. This stance would be altered had I a non-chiropractic background wherein I would interpret the actions witnessed from a different perspective.

Another useful way of viewing this insider/outsider position is that set forth by Gold (Gold, 1958). In his taxonomy, there are four basic roles of observation; complete participant; participant as observer; observer as participant and complete observer. This role of observer as participant ‘calls for relatively more formal observation than either informal observation or participation of any kind’ (Ibid p218). This formality was a part of the participants’ concern in agreeing to take part in this study. A number of potential participants refused to take part as they felt that the experience might be ‘nerve racking’. Although, during observation I offered no opinions on the performance of the participant, more than one of them stated that they were nervous about being observed as they did not want to be judged.

The role of insider also impinges on that of expert and novice. As a chiropractor of nearly 30 years' experience, I may, at least, say that I am not a novice. The characteristics of expertise might involve metacognition, collaboration, propositional knowledge, mentorship of others, communication and cultural competence (Joy Higgs et al., 2008, p.10). Length of service does not naturally confer these attributes. Nevertheless, in chiropractic terms, I would contend that I am an 'expert' when compared to a non-chiropractor.

From this perspective I am able to observe actions and witness communication that have a particular meaning to a novice and another one to an expert. For example, there are a number of different palpation styles which to the uninitiated might be confusing to identify and differentiate. These subtleties do not elude me and allow me concentrate on their meaning rather than their identity. Of course, by their familiarity, they might also pass me by as meaningless with regards to my question as they are, to me, norms. Intrinsic to the process of this enquiry will be the reflexivity brought to bear to uncover the assumptions and positions I have as the researcher. Bolton and Delderfield remark that "reflexivity is the near-impossible adventure of making aspects of the self strange" (Bolton and Delderfield, 2018, p.10).

3.2.5. Paradigm

This question can be set firmly in the interpretivist or constructionist paradigm. Denzin and Lincoln define a paradigm as;

"the basic belief or worldview that guides the investigator, not only in choices of method but in ontologically and epistemologically fundamental ways" (Guba and Lincoln, 1994, p.106).

Interpretivism and Constructionism are terms often used interchangeably. Interpretivism and Constructionism have been disentangled to form two overlapping traditions. Interpretivism is characterised by a struggle between the subjective and

objective world view. Constructionism, conversely, has no concern with the objective believing knowledge to be constructed by social actors. For this study, the paradigm in use is characterised by a goal shared by both delineations. Schwandt puts it thus:

“Proponents of these persuasions share the goal of understanding the complex world of lived experience from the point of view of those who live it. This goal is variously spoken of as an abiding concern for the life world, for the emic point of view, for understanding meaning, for grasping the actors definition of a situation, for Verstehen “ (Schwandt, 1994, p.118)

Interpretivism - stems from a German intellectual tradition typified by Weber who described the chief responsibility of the social researcher as the pursuit of ‘verstehen’ or understanding. That understanding, he argued, was dependent on social actors, as individuals, responding in a unique way to their surroundings and external stimuli (O’Reilly, 2009).

This study therefore will be placed firmly in the qualitative paradigm using an interpretivist approach.

3.3.Methodology and Methods - Part 2

3.3.1. Methodology

In Part 1 of this chapter, the research choices have been outlined. It showed that this exploratory question can be answered using a constructionist approach. This falls firmly into a qualitative paradigm. In Part 2, the choices regarding methodology and method are explained.

Methodology - literally, the science of method (*The Consise Oxford Dictionary*, 1990)- is a term poorly defined and confused with a description of research method (Given, 2008). For the sake of clarity, it will be taken here to mean the broader conceptual tools necessary to conduct the method of the study. The methodology will inform the design, execution and choice of methods. The two major methodological

traditions which are used in this study are an ethnographical approach to the collection of the data and a thematic analysis of the data once collected. These methodologies are discussed in terms of how they inform this study. In any qualitative enquiry a careful consideration of the methodological underpinnings is inherent. Chamberlain (2012) argues that simply naming a framework within which to situate the methods and taking it 'off the shelf' limits creative and thoughtful justifications for the choice of method. She goes on to argue that if the methods are 'thoughtfully connected' with the question, they will automatically reflect a methodology because they have been subjected to an interrogation about their suitability and theoretical congruence. The methodology is presented first here because it helps to explain why the methods of observation and interview have been chosen.

3.4. Methodology informing Data Collection

The following section outlines the methodology followed in the collection of data. This is easier to contextualise if the methods that have been chosen with which to gather data are made clear. This study will use observations of chiropractors in their offices for a period of time treating patients followed immediately by interviews. The reasons for these choices are made clear a little later but first the methodological influences over the data collection are made clear.

An ethnographic lens has been used through which to view the collection of these data. A definition of this methodology and why it was chosen as a 'lens' through which to gather the data in this study follows. This approach was chosen for three separate reasons; firstly, because as a chiropractor I have an informed gaze about what other chiropractors do. Observing chiropractors in practice has rarely been done and never for this purpose (Hennius, 2013; Cowie and Roebuck, 1975). Secondly, it was both as a trigger for discussion and as triangulation, that observing chiropractors in their offices and watching what they did helped to make authentic the questions around their relationship with evidence-base practice. Thirdly the question was sufficiently unexplored in this fashion that a method which allowed for

some flexibility was needed.

Ethnography eludes easy definition; Hammersley and Atkinson (2007, p.79) prefer to describe what an ethnographer does instead of what ethnography is. They refer to “gathering whatever data are available to throw light on the issues that are the emerging focus of inquiry”. Spradley is not so coy. He describes it as “the work of describing culture” (Spradley, 1980, p.6). Creswell refers to ethnography as not the investigation of culture but “a study of the social behaviours of an identifiable group of people” (Creswell, 2002, p.14).

Six characteristics of ethnography described by Speziale and Carpenter (2007) include researcher as instrument, fieldwork, iterative collection analysis of data and, uniquely, a focus on culture, cultural immersion and reflexivity. The issue of observing culture is contentious, suggesting as it does that observation alone can ever fully reveal a culture. This has distinctly positivist overtones and, as Savage remarks, may overlook a challenge to the idea of culture as shared beliefs and practices (Savage, 2000).

If an absolute description of ethnography is difficult to define, then at least it seems most commonly agreed that it requires ‘extended immersion’ in a setting in order to fully describe it. In this regard the scale of this study and the resources available for this work limits this characteristic. By selecting a number of practices and choosing to observe them for 1-2 hours, I managed significantly more observational space than any other work so far published, to my knowledge, in chiropractic save the single ethnographic study by Cowie and Robuck (1975) (see section 2.4.5). However, this sort of immersion may not be enough to attract the term ethnography. As Bryman comments, ethnography is almost defined by degree which begs the question at what point is the immersion enough, the observation of sufficient length or the interview of appropriate depth to deserve the term (Bryman, 2008, p.461).

If it might be a matter of degree by which this study is unable to be labelled an ethnography, it can be said to view the data collection through an ethnographic lens.

For the purposes of this study therefore, the description of ethnographic work described by Hudelson will hold:

“Ethnography...seeks to understand the ‘cultural lens’ through which members of a group perceive their world. This kind of inquiry is most likely to be used when situations are novel or complex and the researchers are not yet sure what questions to ask of whom.” (Hudelson, 2004, p.345)

In summary the collection of the data was informed by an ethnographical approach although it is not referred to as an ethnographical study. This, as previously stated, is primarily because of the limited scope of the study and is perhaps more a function of the ability to immerse oneself for a sufficient length of time into the lived world of the chiropractors under study here. Nevertheless, it is important to report that the study was carried out using an ethnographic lens. This is with respect to the fact that the question was sufficiently open and the expected results sufficiently unanticipated to need a broad approach to collection of the data consistent with an ethnographic approach.

3.4.1. Why observe?

The question of this study is an exploratory one. It is trying to discover the relationship that chiropractors have with the predominant health related paradigm of evidence-based practice. A naturalistic paradigm has been chosen as the most appropriate method in which to seek out the concepts and patterns that might present themselves in the practice of chiropractors. Observation - physically placing oneself in the setting and ‘observing’- is an appropriate method by which we might uncover the aforementioned concepts and patterns (Flick, 2014, p.295).

Observation brings the researcher close to their subjects. It allows the researcher to not only observe previously identified patterns and regularities but also to be flexible enough to look out for phenomena that have not been previously identified.

In this case I have argued that the survey literature is incorrect when it assumes that chiropractors have a clear understanding of the term evidence-based practice or, if they do, what the nature of that understanding is (see section 2.6.1). In order to tackle this issue, I felt it was important to ask chiropractors using interviews what their opinions were, but I felt it equally important that I needed to see what they were doing and use that information to stimulate the discussion in the interviews. In this sense observations would act as an anchor for interview questions but also provide an element of triangulation.

Observation as a method can be criticised as open to bias. The field notes are the interpretation of the setting and interactions made by the researcher who comes with a context and has an individual world view. This can be seen as a threat to validity. Adler and Adler suggest three ways in which this threat can be limited (Adler and Adler, 1994). The first they suggest is to observe multiple sites with variation (see section 3.6.1). The second is to continually test emerging proposals for those cases that might confirm or negate the 'working hypotheses'. The third is to write about these issues so coherently that they resonate with the reader and strike true. They call this last 'Vraisemblance.' This shares the same characteristics as the 'thick description' outlined by Geertz (Geertz, 1973). Bias as a fault with research of this kind is criticised as 'positivism creep' by Braun and Clarke (Braun and Clarke, 2022). It is the very nature of an interpretive approach that there will be bias. Highlighting this bias and describing it in detail enables the reader to judge themselves if it is relevant to the findings.

I come to this work as an insider. I am a chiropractor; not only that but I have a profile within the profession, one that is aligned with a certain approach and laden with my own values. I wondered what impact that this was going to have on my ability to collect data and then to analyse it without allowing this context to interfere with the process. In addressing this question, I was making some assumptions; the first is that one can ever collect and analyse data *free* of values and of context. Hopefully we have set the position that this piece is taking on that issue clear (see section 3.2.5). Nevertheless, might the data be collected differently, analysed differently, if I was not a chiropractor? The answer must surely be yes. If I was a

dentist for example, I might be finding the similarities and differences between my own practice and that of the participants noteworthy. If I was a physiotherapist, I might be contending with a history of professional dissonance and making notes of that.

As an insider I do not suffer from a professional naivety about the conduct of my participants. I understand the 'normal' flow of actions and speech within the consulting rooms. I have a lived experience and rich history of it myself. I compare and contrast the actions that I witness with those that I am aware might be considered 'good practice'. Of course, this does not preclude me from making assumptions about the practice that I am observing and how that informs the answers to my questions.

There was significant potential for negative impacts about my 'emic-ness' or the insider position that I adopted. The first, outlined earlier in section 3.2.4, suggested that some participants might have been nervous of being observed by a contemporary and therefore display a less than truthful version of themselves. This is likely in any observational study. In order to ameliorate as much of the effect of this as possible, I deliberately stated to each participant before the observations that my task was to work out what was informing their thinking and how they were coming to the therapeutic decisions they made and not making any inferences about the efficacy of their approach to any particular condition. Furthermore, I made no comment during the observations unless asked and even then, I kept my comments as neutral as I could.

In the interviews my 'emic-ness' was offset by adopting a deliberate tone of collaboration when asking questions. There was never any judgement or disagreement with a position unless it served the purpose of delving deeper into a position or a statement and was generally at the end of any interview. See the end of section 3.6.5 for an example.

The position of insider in the study begs the question at which point I was an 'outsider'. Hammersley and Atkinson point out that there are difficulties with these

distinctions as in some respect there are ways in which I as a chiropractor will be an insider and yet also an outsider simply because of my own unique life experience (Hammersley and Atkinson, 2007, p.87) . I am an insider in one particular dimension – chiropractic - but an outside in many others. For example, I am male and over 50 years of age. I may fail to fully appreciate the viewpoint of the younger women participants who will have their own understanding of the topic. There is little solution to these difficulties save to continually reflect on these differences and interrogate my interpretation of the data with this in mind. In many ways the observer is a marginal insider *and* a marginal outsider. The first step in solving this conflict is being alive to it.

3.5.Methodology informing Data Analysis

3.5.1. A Thematic Analysis approach.

I have used thematic analysis (TA) to interrogate the data. Thematic analysis, which traditionally had not been particularly well described, has been delineated clearly by Braun and Clark in their commonly cited article “Using thematic analysis in psychology” (Braun and Clarke, 2006). Latterly and during the course of this study, more work had been done about how to conduct a thematic analysis (Braun and Clarke, 2022; Howitt and Cramer, 2016; Terry and Hayfield, 2021), however the initial definition bears up well. It can be defined as:

“ a method for identifying, analysing and reporting patterns (themes) within data. “
(Braun and Clarke, 2006, p.79)

It has been argued that TA belongs with Phenomenology, Grounded theory and Ethnography as a method in its own right. (Braun and Clarke, 2006; Nowell et al., 2017). Perhaps its ubiquity as a simple and general method of coding and theme-making to identify patterns in qualitative data belies its significance.

Some authors deny TA is a method but rather treat it as ‘way of seeing’ (Boyatzis, 1998, p.4). Boyatzis refers to Thematic Analysis as a process; he is explicit that it is

‘not another qualitative method’ (Boyatzis, 1998, p.4). He gives no reason for this statement, but it is not hard to see why he might believe this. He states that it is;

“a process that can be used with most, if not all, qualitative methods and that allows for the translation of qualitative information into quantitated data, if this is desired by the researcher.” (Ibid p4)

The advantages of this approach to the analysis are that it could be described as philosophically unencumbered, in that it does not adhere to any one particular tradition within qualitative research. It can be adapted to a variety of different perspectives (Braun and Clarke, 2020a). In fact, it’s neutrality could also be a criticism in that it can be accused of being ‘all things to all men (sic)’ however Braun and Clarke entreat researchers not to treat TA as atheoretical. Indeed they are very specific that part of the rigour of doing good thematic analysis is to ensure that that the work is theoretically coherent (Braun and Clarke, 2020b). When I began this study, the guiding literature was not abundant. However, TA has become a common method with which to approach qualitative work (Braun and Clarke’s original article in 2006 has now been cited over 55,000 times). It also has an advantage to the new researcher in that it is relatively simple to learn and to use. (Braun and Clarke, 2006; Nowell et al., 2017). However, there are more compelling reasons for choosing this approach.

This case fits well with the essential characteristics of TA (Braun and Clarke, 2022). Firstly, the theoretical assumptions of the enquiry are coherent with the use of TA. This includes the assumption that the subjective will be part of the result meaning that the themes developed here will not ‘emerge’ from the data but will be part of the researchers interpretative account of it. As a chiropractor I will inevitably bring my own lived experience of the profession to bear on this task (See section 3.2.4).

The coding and theme generating procedure of TA can be unstructured and organic. There is no requirement for the ‘line by line’ coding or fine-grained coding explicit in other methods such as Grounded Theory (Birks et al., 2019; Braun and

Clarke, 2020a). This flexibility was important when I was unsure where this question was going to lead. I had no real sense that this endeavour was going to explore or explain and so wished to allow for a development of the question. A more perplexing and rigid methodological requirement seemed to promise a restriction to the possibilities of output.

TA suited the limited scope of this study. Other methodologies such as Grounded Theory are often larger and centred around the interview (Braun and Clarke, 2020a). Finally, it would be reasonable to consider Grounded Theory as a methodological approach to this study. Grounded Theory projects are often large and methodologically very precise but Braun and Clarke suggest that when used in smaller studies can produce “an analysis that is, effectively indistinguishable from TA” (Braun and Clarke, 2020a, p.7).

As in many research traditions, both qualitative and quantitative, there are many iterations for a method and TA is no exception (Howitt and Cramer, 2016). I have used the suggestions of Braun and Clarke as they are clear and well described. In the analysis I use their 6 steps; I have made a representation of those steps in **Figure 4** and **Figure 5**.

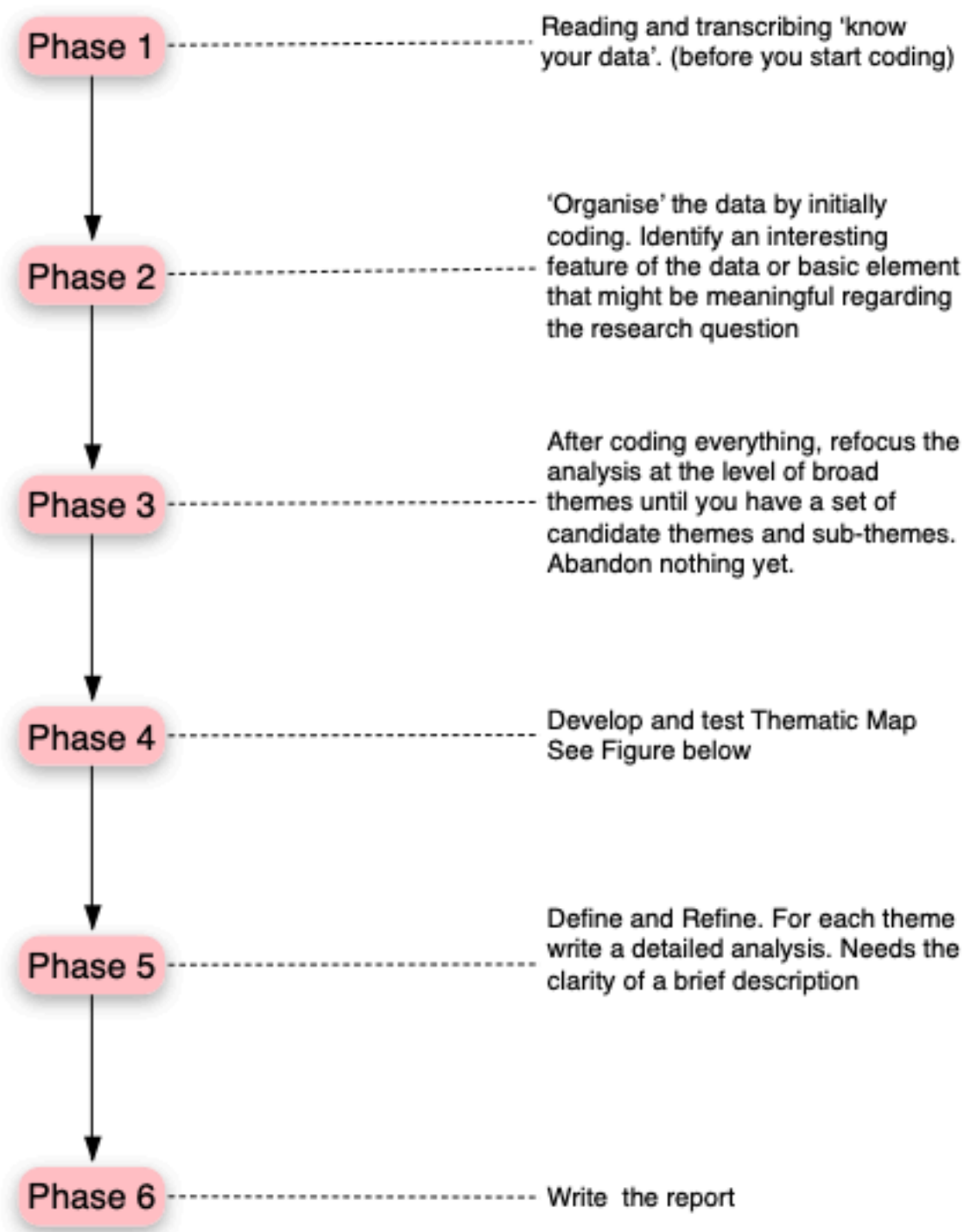


Figure 4: The 6 phases of Thematic Analysis (Phase 4 is expanded in **Figure 5**) (Adapted from Braun and Clarke, 2006)

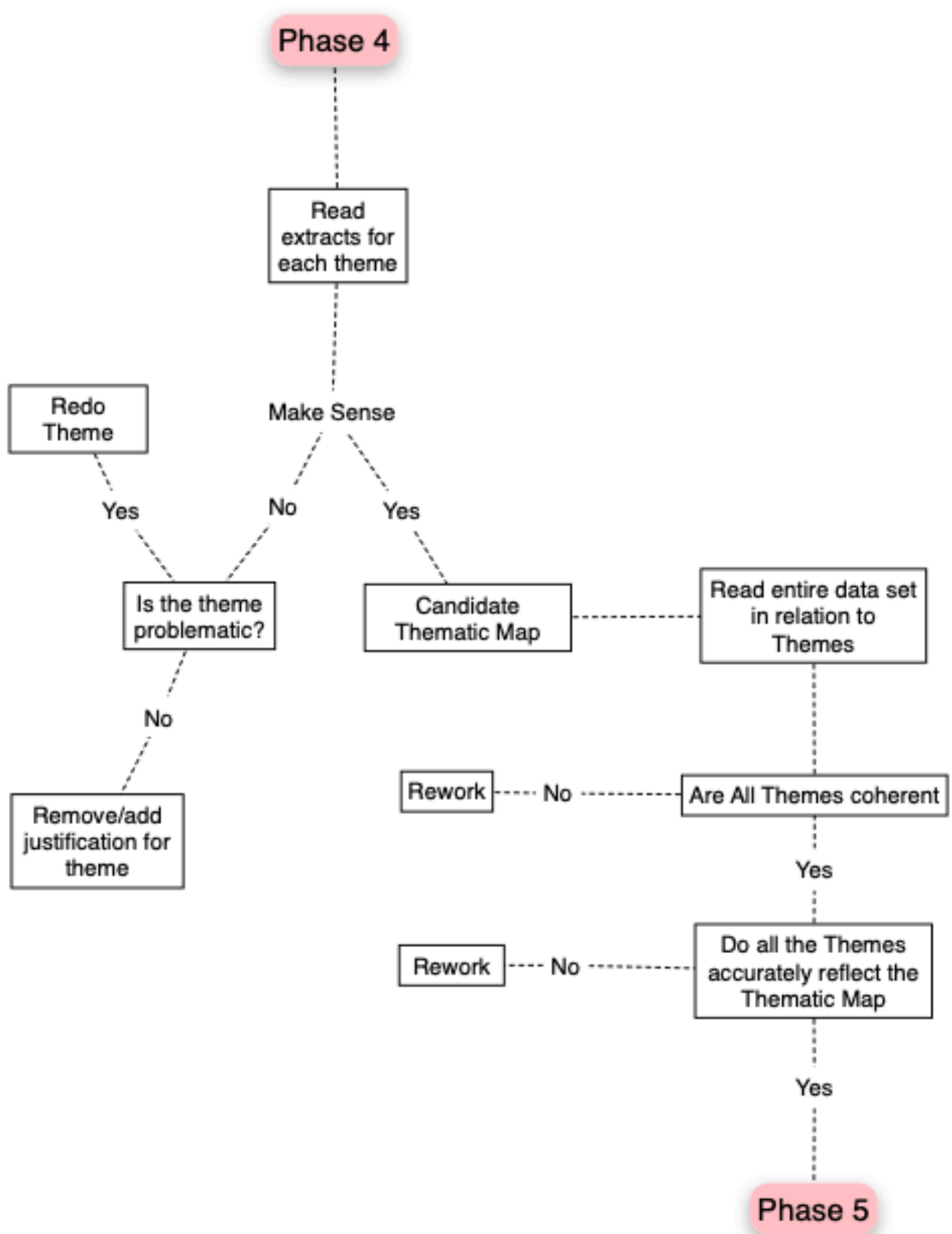


Figure 5: An expanded schema of Stage 4 of the 6 phases of Thematic Analysis. (Adapted from Braun and Clarke, 2006)

3.5.2. A Grounded Theory approach

There are many theories or methodologies to choose from. It may not be obvious why TA was chosen in preference to another to answer this question. Further to the arguments above, the following is a brief explanation about why other more common methodologies were not chosen.

It might be suggested that Grounded theory could have been the more obvious choice for this analysis. It is an approach whose primary purpose is to develop theory about a social phenomenon and as such might have been a suitable methodological strategy to use to answer my question (Speziale and Carpenter, 2007, p.183; Strauss and Corbin, 1998). Grounded theory shares several different descriptions ranging from those of the originators Glaser and Strauss to a more constructionist version developed by Strauss and Corbin and then to yet further developments by Charmaz (Braun and Clarke, 2013, p.184). As such it has distinct methods of data collection and analysis for each iteration. These highly delineated versions of the theory have their own following and support although it may be that these mechanistic approaches were furthest from the minds of the originators, at least in Hammersley's and Atkinsons reading (2007, p.166). A project that is worthy of the Grounded Theory name is often a large one, centres on the interview as the main source of data collection and relies heavily on a dependence to one tradition or another (Braun and Clarke, 2013). There are many similarities in the description of the analytical process with TA and yet the contrast with rigid demands of the individual Grounded Theory traditions begs the question that whilst it would answer the question, what more would be learned about the data.

3.5.3. A Phenomenological approach

A phenomenological approach can be both a broad philosophical stance and a

particular method (Speziale and Carpenter, 2007). Indeed, Paton claims that one can use a phenomenological philosophical basis for a qualitative study without using any of the accepted phenomenological methods (Patton, 2002, p.107). This methodological approach is primarily concerned with “getting at the essence of the experience of some phenomenon” (Patton, 2002, p.107). In this regard it pursues the constructed reality of the individual and whilst this may indeed be a useful approach, I felt that it was not the experience of dealing with EBP that would adequately meet the aim of the study. It has been the aim of this study to discover the active process that chiropractors use to address the complexities of EBP in their approach to musculoskeletal work.

Phenomenological method focuses sensibly on in-depth interviews. It is a method often used to discover ‘essences’ in subjective and difficult to define concepts such as ‘caring’ or ‘comfort’ (Green and Thorogood, 2014). Evidence-based practice is well defined, although contested. It is also a process of thought including elements of cognition, propositional and tacit knowledge and interpretation (Bannigan, 2009; Thomas and Young, 2019). It is the elements of this process that I have set out to capture rather than the lived experience of it in these chiropractors. To that end I also felt it important to be able to watch the chiropractors at work in order to put their words together with their actions. Putting the methods of observation and interviewing together was pivotal to coming to an understanding of not how chiropractors experienced EBP but rather how they constructed the process in their everyday practice. Therefore, an approach that did not concentrate on the interview was felt more appropriate.

3.6.Methods

3.6.1. Sampling Strategy

The strategy used and the size of the sample was guided by two positions: the first, outlined by Patton (2002), is the idea of purposive sampling. In this, I have selected “information rich cases for study in depth” (Patton, 2002, p.230). In that I wished to use an exploratory approach, and I have little to guide my thesis regarding

the fundamental question, I have chosen a typical sample of chiropractors who have among their ranks those who might display the widest possible variety of views that I could expect to find within the profession.

The second position, suggested by Malterud, Siersma & Guassora (2016), has helped to define the size of the sample. Malterud and colleagues propose “Information Power’ as an alternative to ‘saturation’; saturation is the concept that the sample size is defined by the diminishing return of new information emerging as each new participant or case is examined until a stable account of the phenomena under study can be made (Speziale and Carpenter, 2007, p.31). As Morse (1991) points out this might be a fallacy as, under a constructionist approach, it makes little sense to claim a definitive account of any phenomena which might be interpreted differently by different agents in different contexts and different timeframes.

Malterud and colleague’s ‘Information Power’ is a framework for judging the sample size using study aim, sample specificity, use of established theory, quality of dialogue, and analysis strategy. They maintain that accommodating for these dimensions might help to define a sample size (Malterud et al., 2016). Although this is a much more structured and reasoned approach than some, it might still fail to give inexperienced researchers a number, which after all is the matter of concern.

3.6.2. Sample selection mechanism.

Participants were sought by identifying them from the General Chiropractic Council’s register which is publicly available (General Chiropractic Council, 2018) (see **Table 5** for a comparison) . By entering my own postcode into the search facility on the GCC website, I could access chiropractors listed by increasing distance away from my own postcode. I selected chiropractors in batches of 25-30 prospectively using criterion sampling (Patton, 2002). I referred to this as an iteration: I needed four iterations before I had enough for my sample.

My aim was to initially select 20 chiropractors who might between them demonstrate the full range of three characteristics (See **Figure 6** for a flow chart showing distribution of the characteristics). These were: -

- school of qualification
- gender
- years qualified.

These criteria were selected for two reasons; they were the only demographic information available to me and selecting chiropractors with variable characteristics would help to ensure that the sample did not suffer from an accidental sameness. I used a flow diagram to select chiropractors in the same proportions that were seen in the whole population of chiropractors so that I could maximise the variation of the sample whilst hoping for a typical picture. Here, after consultation with more experienced qualitative researchers and considering the ideas of Malterud et al (2016) I chose 20 as the number that might be reasonably expected to achieve the aims of the study whilst still being within its scope regarding time and resources.

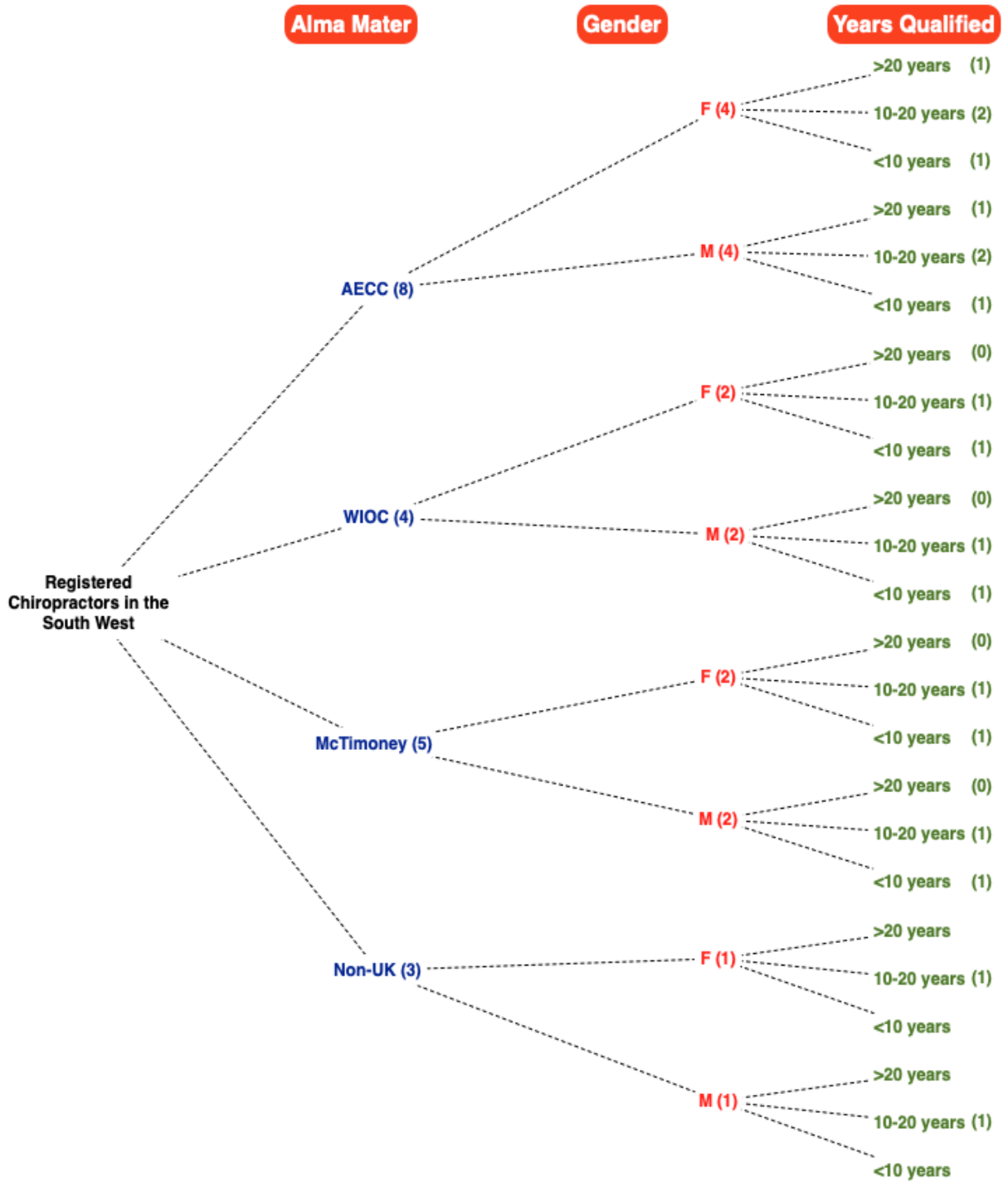


Figure 6: Flow Chart showing distribution of the criterion of the chiropractors in the sample based on the proportions present in the population of all UK chiropractors.

Key - AECC – Anglo-European College of Chiropractic, WIOC - Welsh School of Chiropractic, MCC - McTimoney Chiropractic College, (Parenthesis; appox. number of participants)

This was not meant to be a representative sample. Representativeness is seen as a positivist characteristic which increases the generalisability of a sample to a population (Lincoln and Guba, 2000). This was not my aim.

Previously the distinction between 'Straights' and 'Mixers' in chiropractic has been explored (see section 2.4.3). One way of investigating the phenomenon of the interface of chiropractors and EBP could be to see the difference between these two positions and their relationship to the concept. This criterion as a basis for selection of the sample, was rejected because for the minority of the profession named 'straights', EBP is an irrelevance. This was described in section 2.4.2. It would therefore be a distraction from a study of the greater part of the profession (around 80% in terms of numbers – see section 2.4.3).

One of the assumptions applied to this study is that EBP is a valid health care paradigm and that to base health care on concepts that do not respond to an epistemological interrogation because they are matters of faith, would be invalid and moreover inconsistent with the theoretical underpinning of EBP. To understand the profession's relationship to EBP, it was important to engage as much as possible with that part of the profession that might view this concept as relevant. Even so, the participants included at least 2 who might be described as 'Straights'. In Appendix 8.10, have reproduced some of the reflective thoughts which demonstrate that the issue is not only a methodological choice but also a strangely personal one.

3.6.3. Recruitment

I approached the chiropractors by first writing to them, following this up with a single phone call. Very few responses were obtained from the letters; the phone calls were more successful. Chiropractors are difficult to speak to because they rarely

answer their phones whilst treating patients. I therefore often had to leave messages with their reception staff and either arrange a return call or leave my number in the hope that they would ring back. Those that did ring back and expressed an interest were sent an information sheet and a consent form. If they subsequently agreed to participate, a mutually convenient time for the observation and interview was arranged. This was often mid-way through their morning session so that they had the requisite time free for the interview (more than one interview was conducted whilst the participant was eating lunch). On agreement to participate, questions about the project were sought. There were generally a number of weeks between the agreement and the observation for participants to mull over this information and an opportunity was again sought before the observations for any queries to be answered.

After three iterations of selecting 25 or so chiropractors by nearest postcode, I decided to call specific chiropractors because I needed only certain types of chiropractor to fulfil my sampling criterion e.g., females from one particular school of a certain age. As phone calls were generally a lot more successful at recruiting than sending letters, for the last iteration I approached 7 chiropractors by phone and secured 5 participants. Overall, I approached 82 chiropractors by letter or phone before I secured 20 participant's agreement (**Table 3**).

I was not entirely successful in recruiting the blend of chiropractors that I aimed for. For example, I was unable to recruit a female chiropractor who had been trained abroad **Table 4**

Table 3: Table detailing numbers of chiropractors contacted and the response rates.

Iteration	Contacted	Letter Sent	Phone call	Responded	Will do	Observed
1	30	30	25	15	5	4
2	23	23	17	8	5	5
3	22	22	16	8	7	6
4	7	0	7	7	6	5
	<u>82</u>	<u>75</u>	<u>65</u>	<u>38</u>	<u>23</u>	<u>20</u>

Table 4: Gender and Years Qualified characteristics of the participants.

Pseudonym	Gender	Yrs Qual
Lisa	F	<10yrs
Doug	M	<10yrs
Andy	M	<10yrs
Faye	F	<10yrs
Mary	F	10-20yrs
Ronnie	M	>20yrs
Jeff	M	>20yrs
Bill	M	>20yrs
Rob	M	>20yrs
Grace	F	<10yrs
Annabel	F	<10yrs
John	M	<10yrs
Abby	F	<10yrs
Helen	F	<10yrs
Dot	F	<10yrs
Andrea	F	10-20yrs
Sebastian	M	10-20yrs
Faith	F	10-20yrs
Bob	M	>20yrs
Sam	M	>20yrs

Table 5: Sampling Criterion in the sample and in the GCC population.

AECC - Anglo European College of Chiropractic, WIOC - Welsh Institute of Chiropractic, MCC - McTimoney Chiropractic College, Figures are percentages. (General Chiropractic Council, 2016)
(Numbers are percentages)

Criterion		AECC	WIOC	MCC	Non-UK
School	Sample	40	25	25	10
	GCC	40	20	25	15
<hr/>					
Gender		Male	Female		
Gender	Sample	50	50		
	GCC	50	50		
<hr/>					
Yrs Qualified		<10 years	10Yrs<->30yrs	>30yrs	
Yrs Qualified	Sample	50	25	25	
	GCC	25	64	9	

A further consideration with the recruitment was the ‘Straights’ and ‘Mixers’ orientation of the participants (See section 2.4.3).

3.6.4. Observation

Both the interview and the observation for each participant took place on the same day. The participants were visited over a period of one year as they were available, beginning in March 2018 and ending in March 2019.

Both the observations and the interview took place in the clinic of the participant. Chiropractic clinics are very often owned by one chiropractor, called the principal, who then 'rents' space to another chiropractor or chiropractors who are typically termed an associate. Seventy percent of the participants 'owned' the clinic (the clinic refers to the goodwill of the practice (the patient base) and the furniture and plant - it does not always infer that the principle owns the building in which the practice is housed). The remainder were associates. I drove to all the clinics; the closest were 20 minutes away and the furthest were 2 hours away.

I arranged with each of the participants a mutually convenient time when I would observe them treating a number of patients over the course of a few hours. The observations would take place in the latter half of the morning session or the latter half of the afternoon session. My field notes were taken by hand using a notebook. The notes were scanned digitally on that day and then uploaded to the secure server. They were later transcribed. After each interview, I would generally sit in the car, reflect, and either make further field notes or speak into the digital recorder. These notes were also scanned and uploaded, or the digital recordings uploaded to the secure server.

The interview and reflection recordings or scans were loaded into files, one marked "Interview #" and the other "Observation #" as appropriate. The number used was the order in which the participant was examined. I also scanned and uploaded the consent forms from both the patients and the participants.

The field notes I took changed as I progressed through the project. Initially, as an inexperienced qualitative observer, I made note of anything and everything that I thought might possibly be useful. This included the colour of the walls, the state of the furniture, the dress of the chiropractor, the numbers of cups of tea they had etc. On re-reading the notes later I began to see that making notes of *everything* meant that I was making lists and not observing and linking what I was seeing to my

research question. Whilst I felt it was important to note the character of the clinic, I began to see that a detailed list of the furniture in the room would only be useful if it said something about the question. And sometimes it did. For example, I began to take some note of bookcases. Every treatment room had one. They were full, empty, filled with objects-d'art, had recognisable medical texts, texts written by mainstream chiropractors, those written by chiropractors who might be described as non-mainstream, notes, course folders, old lecture notes etc. These began to be a source of interest and said something about the character of the person to whom the bookcase belonged (not always the participant).

3.6.5. Interview

Immediately after each observation, I interviewed the participant. Mostly this was in their clinic room but for one participant this was on the patio outside the clinic whilst they had their lunch and with another it was in a quiet corner of the pub next door. During the initial conversations obtaining agreement to participate, I ensured that, although I needed to observe, it was equally important to have an undisturbed period of 30-40 minutes to undertake an interview centred around the professional issues brought to light in the observation. As it transpired these conversations often last an hour or so. The average length of the interview was 45 minutes.

It was an important part of the study design that these interviews were linked to the observation and therefore I felt it important to have the interview proximate in both time and place to the observation. In this study, the observational data complemented and informed the interview data. The one was dependent upon the other.

“Observations provide a check on what is in interviews: interviews, on the other hand, permit the observer to go beyond external behaviour to explore feelings and thoughts” (Patton, 2002, p.306)

There was another advantage to having the interview in the clinic room in which the chiropractor practiced; this enabled the participant to feel more comfortable and

thus perhaps more able to broach subjects that they felt uncomfortable with. They would have more control by 'allowing' the interview to start and to finish if they so chose. It also connected them to the actions that they were taking in the room whilst being observed; they would be less open to the self-reporting bias that can be a feature of survey methodology.

The interviews were recorded with a digital tape recorder. After the first two recordings I added a portable microphone to the recorder to make them clearer however I discovered judicious placing of the recorder was the most important predictor of quality. I also discovered that keeping my usual confirmatory statements to a minimum reduced distortion considerably. I satisfied myself with a great deal of silent nodding.

Interviewing is a skill. It requires practice. I had assumed that as a practicing health professional with many years of trying to elicit relevant information from patients, often in the face of resistance, I would be reasonably confident and competent at this task. Whilst I am sure that the interviewing skills, I picked up over the years of quizzing patients played a part, I felt that I still improved as the process matured.

I started the interview always with a question designed to connect with the participant and allow them to express themselves and reassert themselves in the dynamic between us; up until the start of the interview I am mostly the quiet observer. During the observations, I declined to engage with the chiropractor whilst they were treating patients preferring to become as invisible as possible. The first question - "How did you find being observed?" - invariably produced a minor release of emotion, a laugh or a snort. It was an admission, tacit or otherwise, for most of them that it was a nerve-racking experience, and it was cathartic to acknowledge it. I often agreed with them and often complimented them on their performance as a professional being observed. My second question was broad but brought the interview into sharp focus as to its subject - "What do you understand by the term evidence-based practice?". I finished the interview generally with thanks and compliments about how helpful the participant had been. I often found that keeping

the digital recorder going even after I had stated that the interview was drawing to a close was beneficial and could yield valuable insights as participants often reflected on the experience and the content of their interview.

I used a semi-structured form of interview technique. This enabled a certain fluidity and lack of rigidity within the subject matter of the interview whilst allowing some control of the broad direction of travel (Green and Thorogood, 2014, p.97). The interview schedule I devised went through several iterations beginning some time before the interviews were conducted and lasting until the last few (see appendix 8.2). In framing the schedules, I followed Miles and Huberman in their advice to form 'conceptual frameworks' "the main things to be studied - the key factors, constructs or variables - and the presumed relationships among them. " (Miles and Huberman, 1994, p.18) (See an example in **Figure 7**). The iterative change in questions were in response to the answers I was receiving and ideas about the data. The most prominent example of this was a question I introduced in November 2018 regarding the drop of x-ray usage two surveys had uncovered. It attempted to challenge the chiropractors to explain a phenomenon and suggest reasons for the drop. This was because I was finding it difficult to talk to chiropractors about a procedure that they were sufficiently removed from, but at the same time familiar with, whose evidence base had changed substantially. This question was not asked of the first 10 participants.

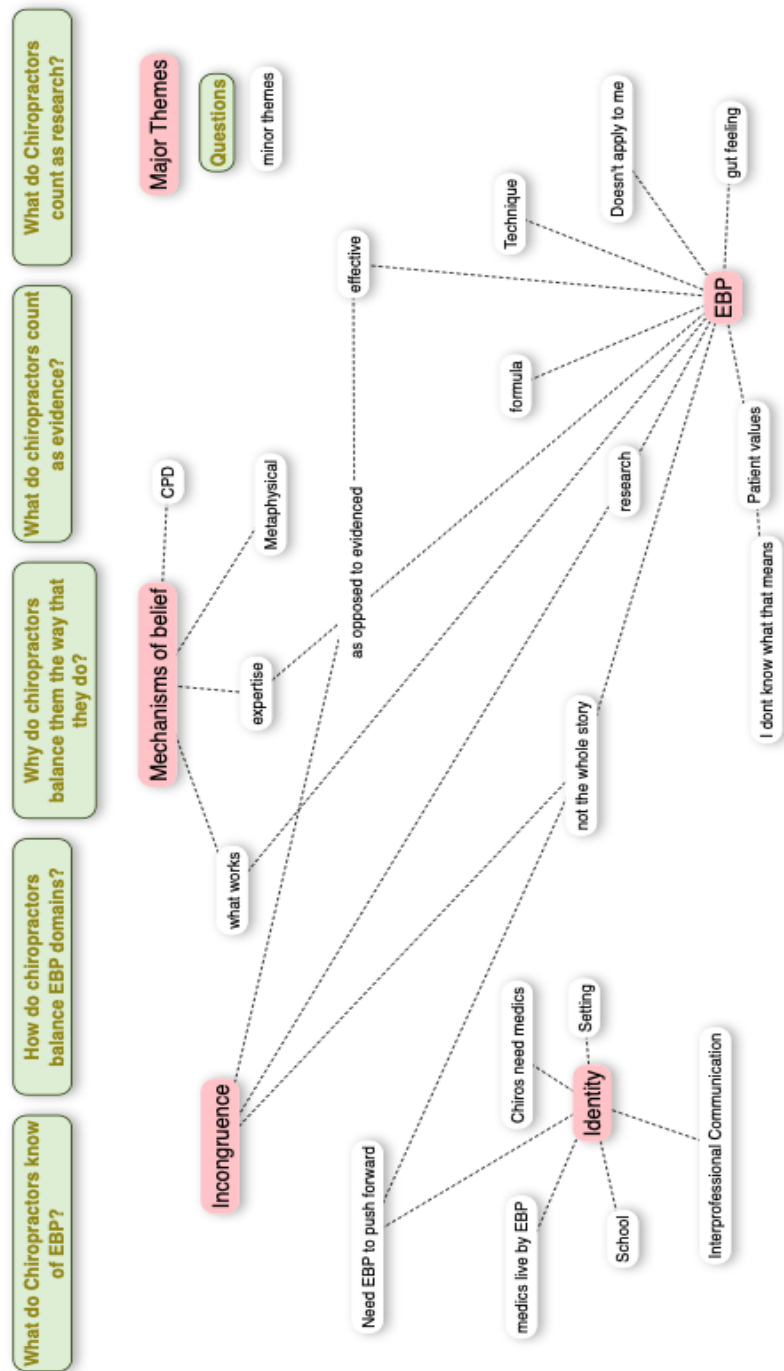


Figure 7: An early conceptual Framework that informed the schedule of questions.

Other questions in the schedule included i) open questions, ii) questions driven by a particular conceptual need or iii) confrontational questions (Green and Thorogood, 2014; Patton, 2002). These last I used sparingly and often more toward the end of the interview. For example, as the interview progressed, if a participant made a statement that might require some sort of evidential backing, I would challenge it. The following excerpt is an example:

John: [00:33:03] ..I mean, kids these days are getting more aches and pains than they did when I was a child.

Keith: [00:34:11] are they?

John: [00:34:12] I think.. I think so.

Keith: [00:34:14] So what's your reasoning behind that? Where did you get that information from?

John: [00:34:20] Why..that's a good point. I couldn't tell you.

3.6.6. Transcription

The interviews were transcribed using Sonix (Sonix Inc, 2019). Sonix is a secure, encrypted automated transcription software web site whose speech to text software generates a time-stamped transcript. Once the sound file is uploaded, it is automatically transcribed. A file is generated where the sound file is synchronised to the written text which can be checked and edited. The Sonix file is far from perfect and needs considerable editing to be accurate. This was a process that I found, with practice, became much easier. At the beginning I was transcribing at a ratio of about 5 minutes of transcription to 1 minute of interview. By the end of the process, I had halved that ratio. I transcribed all the interviews myself. This has the added advantage of familiarising myself with the data. I found at the beginning though, I was concentrating on being accurate so much so that I was unable to engage with the data in anything other than a technical way. As I became more proficient, I was

able to think a little more about what the data was saying about my research question as I transcribed. At the beginning of the process, I questioned the worth of doing the transcription myself and briefly considered having a transcription agency do the work. I rejected this in the end initially because of cost. However, I became so much better at the enterprise that immersion in the data (a common reason given for transcribing (Miles and Huberman, 1994; Flick, 2014; Green and Thorogood, 2014)) seemed possible in a meaningful way.

In qualitative studies of this kind, it is often suggested that the data is examined as it is collected (Miles and Huberman, 1994). Braun and Clarke are less concerned with this evocation, asking the researcher to emerge themselves in the data fully before the analysis begins rather than during data collection (Braun and Clarke, 2006).

3.6.7. Analysis

The analysis was carried out using TA described above. I used NVivo computer software to assist in the coding of the data (QRS International Pty, n.d.). The process of analysis began by becoming familiar with the data. Broadly speaking reflexive TA requires a familiarisation with the data that Braun and Clark describe as unsystematic (Braun and Clarke, 2019). The transcription process has already been described (see section 3.6.6) wherein familiarity with the data began in earnest. Once all the data had been transcribed, I read each participant's interview and my own notes and then made preliminary notes as impressions began to form. These notes were thoughts that occurred in response to reading but not in any way organised into concepts or subjects. Once I had read through all the material once I then read through it a second time adding further preliminary notes. Once this familiarisation phase had been completed, I began the task of becoming more systematic in the way that I approached the data. It is this systemised way of looking at the data that Braun and Clarke call coding.

The coding was at first very challenging. I found it quite difficult to know when to identify a piece of text as worthy of attracting its own code. On the one hand I felt

that codes about everything that I found interesting in the data might lead to a disorientating volume which might say so much about the data that in effect it says nothing. And yet on the other hand I was keen not to overlook any slight remark or observation that I thought might help answer the question. My first attempt at coding therefore had little or no structure. The names of the codes felt unconnected with the central research question I was attempting. After coding the first two interviews and sets of fieldnotes, I reviewed my work and felt it was confused and unsatisfactory. It was with some frustration that I deleted that file and decided to begin again.

I became a little more focused on my second attempt and revisited the conceptual bins suggested by Miles and Huberman (1994) in which I might broadly file and create thoughts and codes that might be relevant to the question. The second attempt was much more successful. I read all the material over several weeks and coded. I then had an NVivo file with close to a hundred codes. In terms of the stages of the TA outlined in **Figure 4**, I had reached phase 3 and was looking to start the business of creating my themes and subthemes. Again, I found this process difficult and for a period of time felt very lost with all this material and seemingly no direction in which it was heading. As so often with staged theories, the lines between one stage and another blur. My reflective journal at the time demonstrates the frustration I was experiencing although it also demonstrates that at that early stage, I was someway along the journey having developed at least two of the themes I would eventually elucidate (see Appendix 8.9).

3.6.8. An example of coding

There follows an example of how a particular piece of data contributed to one of the Themes. In the interview with Andy, the following exchange took place.

Keith: [00:09:52] And do you think there comes a time when you will look at that that information.

Andy: [00:10:09] (pause) No, I'm not going to look at the raw studies.

I coded this twice, the first under a code called 'I don't read research' and the

second under a code called 'Knowledge from codified material.' Each code was labelled, and a short description added. In this case the latter code recorded 'Anything about research articles or written information taken as prompts for decision making.' In Appendix 8.6, I have printed out all the pieces of data used to form the code entitled 'Knowledge from codified material'. There are 16 excerpts from various interviews but none from the field notes. There were also 5 excerpts from an aggregated code called 'Mechanistic reasoning' which recorded discussions about codified material and so was incorporated. The highlighted text, which can be found in the Appendix 8.6 (Page 214), from Andy's Interview on the first page of the code, was used as a quotation to illustrate Andy's relationship with codified knowledge. I used a taxonomy of practice knowledge developed by Higgs and Titchen (1995) (see section 5.2) to group the various codes into a theme 'that captures a shared meaning' (Braun and Clarke, 2022). This code contributed to the idea that these chiropractors do not privilege propositional knowledge. Appendix 8.7 shows all the codes that I brought together to form the theme. In Appendix 8.8 I have printed out a map, generated in NVivo, showing the relationships between the various codes that I placed together to inform this theme. Later this position is explained and situated in the Theme 4 - 'An Imbalance of practice knowledge'.

3.6.9. Validity and Rigour.

The concept of validity and rigour in qualitative research has received much attention because critics may fail to fully appreciate the epistemological distance between qualitative and quantitative research. The basis of this study and for much qualitative research stems from a constructionist perspective of knowledge generation such that it is viewed as an interpretation of a phenomena rather than a repeatable, objective, description of one.

Models of quality in this type of research have been criticised for being too generic and unable to adequately generate assessment of quality across a very divergent research tradition (Cohen and Crabtree, 2008). Nevertheless, there is value in using tenets of some of these frameworks critically to demonstrate rigour.

One such framework is proposed by Guba (1981). This framework suggests four headings: credibility, dependability transferability and confirmability. To make these headings more accessible they are listed in **Table 6** together with broad characteristics of good research.

From a constructionist perspective, terms such transferability, triangulation, validity and rigour take on a particular meaning that is different from the meaning of these terms when applied to the traditional quantitative interpretation. For example, the concept of validity is taken to relate to how mechanisms of the method lead to the establishment of cause and effect (internal validity) and how generalisable any findings might be (external validity) (Lavrakas, 2008; Kalaian and Kasim, 2008). Neither of these concepts relate well to naturalistic inquiry that admits to multiple realities of the same phenomenon with the attendant subjective nature of the researchers' efforts and the uniqueness of the findings. In this study the concept of transferability and triangulation are explored in sections 3.6.12 and 3.6.15. The concept of validity and rigour in this study is taken from Guba (1981) and mean respectively truth value or credibility and confirmability. **Table 6** offers a listing of the domains of quality and how they relate to a constructionist approach.

Table 6: The characteristics of good research adapted from Guba (1981) and Krefting (1991)

Characteristics of Good research				
Generally	Truth Value (Truthfulness)	Consistency	Applicability	Neutrality
Definition	How congruent is the data to the phenomenon in question?	The extent to which repeated administration of a measure will provide the same data	How applicable is the study to my question?	Are there any other factors that might account for the findings?
Meaning	Does the data collected accurately reflect the data produced by the study	If I use the measure in other circumstances will it measure in the same way	Is the population in this study anything like the population I am concerned about	Is the conclusion of the study explainable by any other mechanism.
In Qualitative research	Credibility	Dependability	Transferability	Confirmability
Definition	Representing those multiple realities revealed by informants as adequately as possible.	If one assumes there are multiple realities, the notion of reliability is not as relevant. Variability is expected in qualitative research, and consistency is defined in terms of dependability. This concept of dependability implies trackable variability, that is, variability that can be ascribed to identified sources.	Research meets this criterion when the findings fit into contexts outside the study situation that are determined by the degree of similarity or goodness of fit between the two contexts.	Rather than looking at the neutrality of the investigator, the neutrality of the data is considered.
Potential Mechanisms	Prolonged and varied field experience, Time sampling, Reflexivity (field journal), Triangulation, Member checking, Peer examination, interview technique,	Dependability audit, Dense description of research methods, Stepwise replication, Triangulation, Peer examination Code-recode procedure. Divergent sampling	Nominated sample, Comparison of sample to demographic data, Time sample, Dense description (readers business)	Confirmability audit, Triangulation, Reflexivity

3.6.10. Credibility

This refers to the truthfulness of the data, or the proximity that the data has to the phenomena observed, in this case the chiropractor’s interface with EBP. In a positivist setting this might be termed internal validity and refer to the mechanisms used to isolate the phenomena in question from all other confounding factors. Work from a constructionist view admits to the inherent contextual nature of knowledge generation, so whatever measures are taken it is accepted that the conclusions we may come to from looking at this data will never be immune from the influence of the researcher and the context in which the data is generated. Mechanisms are

recommended to bolster the accuracy of the data insofar as it can be done often using techniques which seek similarity or repeatability in the data. This could be having more than two researchers code the data, or collecting the data from a wide variety of participants, or collecting it using different points in time and seeking what Guba refers to as “verisimilitude’ (Guba, 1981, p.80).

Member checking or asking the participants to verify the accuracy of the interview, is frequently cited as one of the ways to assist in the truthfulness of the data. As the interviews were recorded, the transcription will be as accurate as the participants memory. The second type of member checking where the results of the study are presented for validation assumes that a discrepancy in the participant or the researchers view should be resolved. It speaks therefore to a postpositivist stance that the pursuit of a single understanding of a social encounter is desirable and possible (Varpio et al., 2017). This is at odds with the previously mentioned constructionist research stance that this study takes (see section 3.2.4).

3.6.11. Dependability

Guba and Krefting both refer to the characteristic of dependability within qualitative research as the ability of another researcher to adequately follow the steps taken to understand how the conclusions of the study were drawn (Guba, 1981; Krefting, 1991). This does not indicate that another person’s interpretation of the data is going to be exactly the same but that it is clear how the conclusions were arrived at by a close description of the mechanisms of data collection and analysis. In qualitative work, the underlying assumptions are of the multiple ways in which a phenomenon can be viewed (see section 3.2.3) rather than the single expression of truth that robust internal validity confers when measuring phenomena using instruments that have high reliability and repeatability. The human experience is one where there is great subjective variance, and in qualitative work the human is the measuring instrument (Krefting, 1991, p.215).

In this study dependability has been achieved by carefully describing the stages of TA with which the themes and codes have been developed (See section 3.5.1). To

support this there is a report of how a code contributed to the development of a theme and how a map of the codes in this theme contributed to its creation (Appendix 8.6, 8.7 and 8.8). Furthermore, a selection of quotations are used to demonstrate how they have informed the descriptive and interpretative analysis.

3.6.12. Transferability

To discuss the characteristic of transferability, it is useful to examine the concept of generalisability. The Sage Encyclopaedia of Social Science Research Methods under the entry for generalisation reports; “External validity is a property that allows research findings to be generalised to a larger population.” (Lewis-Beck et al., 2004). This is the overarching purpose of science, namely to gather new understandings about the universality of a phenomenon in a population by examining the existence or the characteristics of that phenomenon in a sample of that population. (Schofield, 2002; Lewis-Beck et al., 2004).

In quantitative research this is achieved by adherence to a number of issues concerned with internal validity. That is to say, the sample is considered a representative and randomly selected portion of the population under study.

In qualitative work, samples tend to be small and, crucially, selected non-randomly. They are intended not to be representative of the population from which the sample has been drawn but rather the phenomena under study. If generalisation is a function of the randomisation and representativeness of a sample, can qualitative work ever claim to be generalisable?

Some consider that generalisation is impossible in qualitative research (Lincoln and Guba, 2000). Instead external validity is represented by the term ‘transferability’ (Guba, 1981). Data should be described so fully and with such depth that those characteristics that may be identified in one context can be applied or ‘transferred’ to another. This interpretation of the data is the responsibility of the reader of the research rather than its author as only the reader is able to judge both contexts.

Sensitising the reader of the research to the existence of a concept is another way that qualitative work can fulfil the imperative to provide applicable findings from research (Green and Thorogood, 2014, p.251). In this instance, the existence of a phenomenon may be identified and described; this in turn will 'sensitise' readers to the existence of similar phenomenon in a different population.

Gobo suggests four other ways of addressing generalisability in qualitative work (Gobo, 2008). He cites Stake (1978) who coins the term 'naturalistic generalisation'. Stake claims that knowledge arrived at by observing similarities is 'both intuitive and empirical.' On one level this is patently true in that, as humans, we make these judgements regularly; for example, when we drive to work (in the UK) we expect oncoming traffic to keep to our right. We have no formal inductive evidence that that will forever be the case however we have experienced this regularly enough for us to make that inductive leap such that, in the normality of our everyday journey, we will drive on one side of the road and oncoming traffic on the other.

The second way that generalisation is addressed according to Gobo is by examining the mechanisms that exist between cause and effect and comparing these to an existing understanding of related phenomena derived by statistical studies.

The positions above remove the responsibility of the qualitative researcher to 'generalise' in the sense that inferences from their data can be directly applied to a broader population providing the generally accepted tenets of internal validity have been maintained. Gobo links this type of generalising to the 'Theoretical sampling' promulgated by Glaser and Strauss (1967) wherein the generalisation refers to a concept or phenomenon that might exist within a population rather than a characteristic of the population itself (Gobo, 2008).

The final two positions involve 'cumulability', or the accumulation of similar observations in case after case as put forward by Cronbach (1982), and 'Analytic induction.' This last is the iterative process of developing and testing hypotheses using similar cases until the hypothesis under examination is no longer refuted.

The generalisability of qualitative research is often given scant attention as it is assumed impossible or the duty of the reader and not the researcher. However perhaps we should redefine the term generalisability when applying it to qualitative research. The first is to say what it is not; it is not the application of discoveries to fashion universal rules. It is rather the ability to draw similarities and differences in conceptual phenomena *present* in populations under study (Schofield, 2002).

Another consideration in the debate should be the meaning of the word generalisation. Williams gives a term to the way in which most use the word; he calls it 'Moderatum Generalisations' which arise from

"...cultural consistency and are the basis of inductive reasoning in the lifeworld" (Williams, 2002, p.140).

For this study, I have kept to the idea that I am not trying to elucidate a frequency of evidence-based approaches used by chiropractors but rather am trying to find similarities and differences in the way that they think of evidence-based practice. It is these conceptual phenomena that I am tracing and will then suggest exist, at least in an unspecified proportion of the broader population of chiropractors ready for educators and policy makers to make of it what they will.

3.6.13. Confirmability

Confirmability equates to the neutrality that is a characteristic of quality in quantitative research. It relates to removing the bias of the investigator as much as possible by using methods such as randomisation. In qualitative work this removal of the subjective is not only impossible - because human interpretation is the instrument of data collection, and the human is terminally subjective - but also not desirable. Guba suggests that that instead of ensuring the neutrality of the investigator, good qualitative research should ensure the neutrality of the data. Conversely this may mean becoming closer to the data though mechanisms such as methodological triangulation, reflexive accounts and prolonged immersion in the environment in which the data is being collected. This closeness enable the

researcher to present as full a picture of the data as possible, building its identity and therefore helping the reader to judge for themselves how truthful the description and interpretation might be.

In this study, two principal methods were used to promote confirmability: methodological triangulation, and reflexivity. The reasons for choosing observation followed by interviews has been visited earlier (see section 3.5.5). This provided two differing methodological approaches to the same phenomenon under study and enabled some triangulation. For example,

From Faye's interviews

Keith: [00:00:56] OK..what you do you call evidence.

Faye: [00:00:57] Well. It really depends on what's in front of me. If you read, looking at standard neck pain and back then you've got a fair vat of the evidence in terms of chiropractic care can help on those fronts and the evidence for say some of the other stuff that people come in with is a little bit..either not great quality, you've only got case studies or otherwise..or is non-existent.

From Field notes after the visit to Faye

[00:06:13] She doesn't have any access to articles, and I thought that actually was quite an interesting point. She doesn't have access to articles and that must limit her ability to at least make some sort of a stab at reading the literature.

Faye here is couching evidence in terms of articles that she reads which earlier she had confessed that she has little access to. In the field notes I noted Faye's description of the nature of evidence highlights some inconsistencies in the account. She couches evidence in terms of 'articles' and yet does not by her own admission, have access to them to read. It supports the interpretation that these chiropractors had an incongruent and incomplete sense of the evidence and how it might inform their everyday practice. I contend that without these two approaches an inadequate interpretation of the data might have been reached.

3.6.14. Reflexive Account

An essential tool for most researchers is a reflective diary and this was used extensively before the interviews to make clear my own positions and views. Being aware of these assisted in seeking the participants truth rather than mirroring my own during the interviews, or at least highlighting where my views are shaping the data. Before the observations, I found it helpful to focus on the questions I was trying to find an answer to by considering a conceptual map such as the one found in **Figure 7**. These maps evolved as I progressed through the work and focused my inquiry. For example, the idea of 'Identity' became subsumed into ideas of otherness and incongruence.

3.6.15. Triangulation

Triangulation is an important source of rigour within qualitative work (Krefting, 1991; Flick, 2014). Triangulation is taken to mean that different perspectives are considered when trying to answer the study question (Flick, 2014). These different perspectives can take place around data (different sources of data), the investigator (researchers examining the same data to assist in minimising the bias of one), the theoretical direction of the study (using more than one theoretical point of view with which to interpret the data) or the methodology (collecting data from the same source using different methods) (Flick, 2014). In this study methodological triangulation was a corner stone of its design and execution This necessitated two separate methodological ways of collecting data about the same topic. Participants were observed and then interviewed. The observation provided data in two ways; firstly, it informed the subsequent interview by providing actions about which further questions could be asked. Secondly, the underlying question of how the chiropractors interfaced with EBP could be addressed by observing actions and drawing conclusions. If the observation was the only source of the data, then it would be possible to form an incomplete picture. For example, a chiropractor might be observed using an unorthodox approach for a particular condition. In terms of the study, this might imply that they had divergent views of the use of EBP. In the interview which is a different perspective on the same event, this action can be explored and the conclusions about EBP either refuted or confirmed. The observation provides evidence of what Schon refers to as theory-in-action (Schon,

1983). In the interview, participants are asked to isolate detail about their intentions behind the action. This can reveal 'participants 'espoused theory' or the theory of practice that they aspire to and can be matched against their actions. Therefore, two sets of data were used to triangulate the position of the participant's interface with EBP.

3.6.16. Ethics

Ethical approval for this study was provided by REACH, the Ethics committee of the Department for Health, University of Bath. The initial application was refused on a variety of grounds and whilst this was discomfiting to begin with the exercise of shoring up the inadequate initial submission was instructive.

3.6.17. Consent

Consent was needed for both the participants and the patients. It was decided early in the process that although I was not actually interacting with the patients the chiropractors were treating, I was nevertheless observing them and therefore consent from them was needed. It was at times quite difficult to give the patients opportunity to question the issues raised on their information sheet as the chiropractors did not seem to see the importance of this and would, if allowed, have continued on suggesting, as some of them did, that the patients could read the information sheets when they got home.

I managed this by firmly asking the chiropractors to allow the patients to read the document. After the first two or three observations, I gave the information sheets to the reception staff of the clinic and asked them to hand them out to the patients who were waiting to be seen; I would then see the patient before they came into the consulting room and ask if they had queries about their consent. I was only ever asked one question; the questioner asked if I was going to hold on to any of their personal data. I was able to reassure the patient that apart from the date of the visit, I had no identifying data of theirs and was therefore unable to hold on to any.

The patients were consecutively recruited on the day of their scheduled treatment time. They were not sampled in any structured way. They were the patients who had booked in to see the participant chiropractor that day.

I am sure that this process would have been a lot more difficult to manage had I been either an outsider or an unseasoned practitioner. I felt confident enough, and understood the procedure of the treatment process enough, to know when I was able to insist that the research process take precedence. It would have been very easy to have been intimidated and allow the patients' consent process to suffer. This was one of the incidents that led me to reflect deeply on my role as observer and how my position as a senior chiropractor might be affecting the nature of my observations, (See reflexive account - Appendix 8.9)

3.6.18. Malfeasance

An issue regarding the consent of the chiropractor was what to do if there was a breach of the code of professional standards (General Chiropractic Council, 2010). After some thought a wording was found that seemed not to alarm the participants and a codicil was added at the request of the Ethics Committee that withdrawal from the study would not affect the duty of the researcher to report any such breach (see appendix 8.5 , Sec 6). In retrospect it might have also been more complete had I mentioned that raising some of the issues around the validity of information on which evidence was thought to exist might also be harmful. Pointing out some of the evidential inconsistencies has the potential to significantly disturb the basis upon which these chiropractors were basing their living. If taken to its reasonable conclusion there was every possibility that it might undermine their living. I have no evidence that this took place.

3.6.19. Confidentiality

In this study the patient's data are anonymised as much as is possible, and the participant's data are confidential. Anonymity in this instance refers to fact that no 'unique identifiers' were gathered from the patients (Sieber and Tolich, 2013). Even if

their names were mentioned in the consulting room during the observations or in the subsequent interviews, they were removed from the data permanently. During the transcription process, if a name of patient was mentioned it was replaced with a letter and a number of stars to indicate an anonymous agent e.g., L*****.

In contrast, confidentiality refers to identifying data and the agreement one has with a participant about their data (Ibid). It is this arrangement that I had with the participants. They were assured that I keep the data securely and the information is accessed in my office or at home. The key to their identities is kept on an encrypted password protected server at the University of Bath.

Both participants and patients were offered the chance to withdraw from the study for any reason unstated or otherwise and have their data removed. As the analysis was concurrent with data collection, participants and patients were given a time window to withdraw (one month) after which their data could not be removed from the analysis. All the recordings, transcriptions and any digital information held however would be destroyed (all paper notes were digitised, and the paper notes immediately securely shredded).

A data management plan was drawn up in accordance with requirements of the University of Bath's ethics committee. It sets out how the data is managed, kept and stored and for what period. It can be seen in appendix 8.4.

3.7. Conclusion

To summarise, this chapter establishes the paradigm, methodological and method choices that have been made in attempting to answer the question set. For this project, a constructionist paradigm from a naturalist perspective has been used to collect data using observation and semi-structured interviews. An iterative inductive strategy is used to examine the data. An ethnographic lens is used for the collection of the data, reflecting carefully on the 'observer as participant' role which I have adopted. The analysis has been informed by the interpretation of TA by Braun and Clarke (Braun and Clarke, 2006). In the following chapter, I will discuss the

findings and explore their meaning and contribution to the question.

4. Chapter 4: Results and Discussions 1

In qualitative work, results and discussion are often presented together. Listing the findings without the interpretation that brings them to life may risk a dry and ultimately unsatisfying report of the investigation (Holloway and Brown, 2012). The results and discussion are therefore presented together and in two chapters. The first chapter, chapter 4, will explore the character of the relationship that chiropractors seem to have with EBP in three themes. Chapter 5 describes the fourth theme which reflects the practice knowledge these chiropractors use and how this relates to EBP.

In this chapter, three major themes are presented relating to chiropractors' interface with EBP: "The otherness of EBP", "An incongruence of thought" and "There's a dance to be had". The first theme describes the foreignness of the concept of EBP that these chiropractors express. They are in some ways distant from the concept seeing it as something enacted upon them. The theme 'An incongruence of thought' describes conflicts that appear in these chiropractors' idea of the nature of EBP and how this differs if they are viewing it from a professional or a practice stance and finally the theme 'There's a dance to be had' refers to an observation about the 'performance' of the patient encounter and how this links to an idea of conceptions of practice.

4.1.Theme 1; 'The otherness of EBP'

The aim of this thesis is to uncover the relationship that chiropractors in the UK have with EBP. To understand this relationship, it is important to understand what chiropractors think EBP is. In the literature review we saw how chiropractors are often assumed to have a complete idea about the essential character of EBP. It is an assumption that I contend is mistaken. It is important to understand what these participants, as practicing chiropractors, understand to be the nature of this concept. This section will therefore begin with a description of the nature and character of EBP as perceived by these chiropractors.

4.1.1. An incomplete definition of EBP

Throughout the interview process, little consensus emerged regarding the definition of EBP. To uncover the essential beliefs about EBP, all the interviews began with the question about what the participants understood about the term. The question used the phrase ‘what does the term EBP *mean* to you?’ I realise on reflection that this could be taken to describe a personal interpretation of EBP as opposed to a published one. Later it will be shown that this difference is quite important to chiropractors and significant in the way that they view EBP. To begin with I shall report how they answered the question and give a descriptive account. Later in the chapter I will present the interpretive, inductive argument as to how these stances may be explained.

Participants had a narrow view of EBP that did not embrace all the different sources of practice knowledge in the decision making that EBP predicates. Most of them were privileging propositional knowledge in their descriptions. Propositional knowledge is one of two common distinctions used when describing practice knowledge (Higgs et al., 2008, p.154). The other is non-propositional knowledge. The former is the knowledge gained through research and scholarship, the latter is that gained in practice through clinical experience and personal context. More of this distinction and its relevance is explored in the theme about an imbalanced relationship with practice knowledge (see section 5.1). Here, it is sufficient to recognise that these chiropractors make little admission of the role of any other type of knowledge that might be used in the definition of EBP. This helps to characterise the nature of EBP these chiropractors hold. Participants in this study hold research and scholarship to be its defining feature.

One participant defined EBP in a very different way. Her description of EBP was so different to everybody else’s that it stood out and helped to inform my thinking on this question. Braun and Clarke describe codes as outputs and coding as a process. This coding process can be defined as “exploring the *diversity* and patterning of meaning” (my italics) in a dataset (Braun and Clarke, 2022, p.53). And so, it was with

this observation. Andrea's description of EBP was so divergent from the other participants that it brought the other participants incomplete definition of EBP into sharp relief;

Andrea: [00:02:50] "Ok. So, my understanding of evidence-based practice is using evidence to inform your decision making. So, in terms of if someone presents with a certain complaint what do we know about what's been deemed effective for that particular problem. And so that's the evidence that's been shown in RCTs and things like that are about what actually works. So, it's that kind of evidence. There's evidence from your experience. So, you know what's been shown to work to you in practice. I think that's a form of evidence as well ..says they've had several patients with the same problem in. And you've found over time that certain things work for that.... for those people then for me that's evidence as well as to what.. what helps. And I also think it's really important to take into consideration what the patient's preference are as well."

Andrea's answer to the question stood out from the other replies as it carefully described three considerations; what we know from research, from clinical experience and from patient preferences. Her answer was the only one that did this. The other chiropractors understand EBP in terms of codified, propositional knowledge. It is from this position that they address the character of EBP (see section 4.1.2).

Questions later in the interview asking about 'patient preferences' or 'patient values' supported the notion that they had an incomplete conception of EBP, at least by accepted definitions of the term. When asked about patient preferences or patient values as part of EBP, there was some doubt.

Annabel: [00:17:42] "It's not ringing a bell."

Sam: [00:04:48] "Patient Values, I'm not really sure what that means."

Bob: [00:22:06] "Patient values, patient values, what do you mean by that?"

Rob: [00:34:45] "Patient values what do you mean by patient ..actually by patient values... I suppose when you say the patient values... I suppose the patients the patient's participation I suppose."

Ronnie: [00:03:53]" Patient values. Right. You mean like what you think the patient expects, is that what you mean?"

This underscores the notion that when you ask chiropractors about EBP they do not have a well-developed understanding of the full range of sources of evidence that might be used in decision making. It implies that the participants have a narrow view of evidence, commonly thought to be research and scholarship and that asking questions about this subject requires the sort of approach used here to uncover their actual understanding of the term. With a clearer idea of what it is that chiropractors understand by the term, it becomes more manageable to describe their relationship with it.

To build this theme, I identified several patterns of meaning or codes when chiropractors talked about their perception of the EBP. These codes I labelled semantic codes, with the letter 'S' in their title. Braun and Clark discuss these terms as a way of differentiating between descriptive codes and interpretive ones (Braun and Clarke, 2013). When the letter S was in the title, the code *described* 'an analytically interesting idea, concept or meaning' (Braun and Clarke, 2022, p.53). They were 'noticings', descriptions of observations that pertained to the question. It was later as these 'noticings' began to coalesce that I developed a personal interpretive account of the data. The following codes all begin with the abbreviation EBP and attach some idea to it as expressed by the participants. They help to clearly identify how these chiropractors view EBP. These chiropractors variously describe EBP as research, justification, legal justification, as a threat, as negative and finally as a limiting factor.

4.1.2. EBP as research

Participants in this study had a varied and, with one exception, very incomplete idea of the nature of EBP. Earlier a summary of definitions stated that EBP is the concept that health care decisions be driven less by custom and more by a systemised, experimentally based measure of effectiveness combined with the

expertise of the healthcare professional and the wishes and values of the patient. The description of EBP above is often taken to mean an adherence to a quantitative scientific scholarship and a number of the participants in this study were no different. They used phrases like:

“scientific study” (Jeff: [00:01:29]),

“quality research” (Ronnie: [00:01:19]),

“random controlled studies” (Helen: [00:17:21])

as the basis around which they answered the question about what they understood of the term evidence-based practice. Sam gave a typical answer reflecting this interpretation.

Sam: [00:01:37] “My understanding of it is that it's based around.. is based around best practice which is derived from research.”

For some therefore, EBP was aligned very directly with research and in this case that aligned with quantitative science. (These participants see research as being grounded in the “empirical analytical paradigm” favouring quantitative approaches to research. Understanding the attitudes and beliefs of chiropractors towards what defines research was beyond the scope of this study.)

4.1.3. EBP as justification

Other participants had a range of ideas when directly asked about what EBP means to them. These included EBP as justification for a form of testing or a rationale for choice of treatment technique.

Grace: [00:10:54] “It's being able to justify what you're doing.”

Annabel: [00:05:18] “Evidence based practice is well, I understand it to be using techniques and methods within treating patients that you've got support and backup from papers or books and stuff that you're not just doing it for no reason.”

Rob: [00:05:02] "Evidence based practice means there's a rationale for things that you do."

Doug: [00:04:30] "To me evidence-based practice means.. if I was to be absolutely rigid about it, I would only be using techniques that had been documented in some way to have a.. what's the word I want, I nearly said beneficial... therapeutic effect."

4.1.4. EBP as a legal justification

EBP has been viewed as a justification for action by these chiropractors. An extension of this is EBP as a legal justification.

Dot: [00:02:46] "Especially with the GCC complaints and all the other ones that... if the evidence isn't there and you can't justify why you've treated a patient for X reason then you're in big trouble."

Doug: [00:13:19] "Well if you're not careful you get a situation where you say you can't do this or you can't do that because it's not been shown to work."

In answer to the question why she thought EBP was a threat, Mary says

Mary: [00:22:41] "Just because of litigation in the way that the GCC work really."

Here again chiropractors are referring to EBP as something that limits, cajoles, controls or punishes.

4.1.5. EBP as a threat

I was interested to see if the participants considered EBP in opposition to their ideas of chiropractic as a therapeutic enterprise. To that I end I asked if they saw it as a threat. Some were categorical in their reply.

Ronnie: [00:10:01] "I think it's essential."

Sam: [00:14:11] "Yeah, my view is, that I think.. I think it's a very important part of the profession."

Andy: [00:24:21] "I think.. it's certainly not a threat."

Faye: [00:14:04] "No, no it's just science."

Whilst others were more nuanced,

Abby: [00:17:00] "Again I guess it depends on if it's biased if it's not properly done. You know it could go the other way; it could really favour us if it was."

Annabel: [00:16:34] "I've never come across anyone thinking that it was a threat, but I think maybe again, I'm not going to be making assumptions, people that may be stuck in their ways a little bit, maybe forced to change their ways and they may be questioned, they may not like that and that may be a threat to them."

Jeff: [00:12:48] "It's the way forward but you've got to have that grey area where other techniques can be used as well."

Abby uses the phrase

"it could really favour us" (Abby: [00:17:00]).

This statement puts EBP as an outside agent in opposition to 'us'. By 'us' she is referring to the chiropractic profession. EBP can be viewed as both non-threatening and yet still not integral to the identity of a chiropractor. EBP is something that is generated by other people, by medicine and not by chiropractors. This lack of ownership of the concept of EBP was a deep thread going throughout the interviews. EBP seemed to represent a position much like a political argument. One was against it, or for it, or saw some of the argument but not all. It was not something that they own or generate. It was not *their* argument. Jeff made a statement helping to generate this

theme.

Jeff: [00:28:08] “..... we're living in an unfortunate situation where we're not really deciding whether its evidence based. It's... it's the medical profession who are deciding.”

Jeff reveals that he was assuming EBP to be generated by someone else other than Chiropractors. An inference might be that if Chiropractors were to generate their own EBP, it would somehow be more acceptable or at least different.

4.1.6. EBP as negative

Chiropractors may feel a certain otherness about EBP, but it is interesting to ask what the character of that otherness is - is it negative, positive or even neutral? EBP is often criticised for its limiting effect on the choices of professional treatment (Cohen et al., 2004). These chiropractors often mention how EBP would limit what they do.

Rob: [00:05:14] “The other end of the spectrum is that one only does things for which there is..sort of.. research evidence for. Which I think is totally non-patient friendly. No way of Practising.”

Rob here is setting up EBP in opposition to good practice. Doug feels that it could be used to negatively affect chiropractors.

Keith: [00:22:56] “So we talked about evidence-based practice as being, in your view, about clinical trials.”

Doug: [00:23:06] “Well, no, I'm not saying that. What I'm saying is we have to be careful how it's not used as a stick to beat us with because it's... it's a case of which evidence are you prepared to work with.”

Doug fears that the concept of EBP is a potential weapon - a stick - in the hands of others. He does not elucidate who these others might be, but in the context of his interview, the assumption is that they are not chiropractors.

EBP to these chiropractors appears to be almost foreign, as in not indigenous to chiropractic. It is something other and is imported or even imposed by the medical or scientific hegemony. After equating EBP to science, Rob actually uses that word.

Rob: [00:25:38] “..there's this whole hegemony of science, it's taken over from religion ..”

In this way these chiropractors may be seeing EBP as a symptom of an oppression they feel, as chiropractors, from the more orthodox expression of healthcare.

4.1.7. EBP as a limiting factor

The concept of EBP as a limiting factor was explored by some chiropractors. It was fashioned as a concept that might stifle innovation and prevent new practice emerging.

Jeff: [00:02:58] “So the.. the thing that is important is. If everybody just uses evidence-based techniques there'd be no growth. Because you wouldn't be it wouldn't be pushing the boundaries. So, you need that in every type of profession otherwise.”

Seb: [00:10:24] “I think I feel it's a threat [EBP] because some people or professions or professional bodies can get all dogmatic and I think it doesn't allow for innovation. It doesn't allow for sideways thinking. It's it puts everyone in a certain box and and..and..it narrows. thinking. And. I always think there should be wriggle room.”

The conceptions of EBP as a justification, as a negative or a limitation are all characteristics which imply EBP is a factor that impacts upon chiropractors. As such it is a concept that they do not own. It is almost as if someone else has control of this crucial feature of their practice and imposes it upon them. It is this remoteness and lack of participation in the enterprise of EBP that is striking.

So far, we have explored these chiropractors' conceptions of EBP by trying to understand how they define it or the particular characteristics they attach to it. It is appropriate now to comment on the implications of these descriptions.

4.1.8. The Otherness of EBP to Chiropractors

Why does otherness matter in terms of EBP? In other professions it was noted above that there is often a willingness to support the concept of EBP, or have positive attitudes towards it, and yet it is often not clear how much professionals truly understand about the concept and how they engage with implementation into their daily practice (see section 2.6.1.).

With the chiropractors here, a wish to be 'seen' to be evidence-based is demonstrated, in the way that surveys of chiropractors and a range of other healthcare professions show. Beyond this however, chiropractors begin to look at EBP in a range of ways when it comes to their personal account of it. They see it as negative or legalistic or limiting. The chiropractors in this study rarely engaged with the concept of EBP in a positive light when they were discussing it from a personal practice point of view. The very best we can say about this aspect of their relationship with EBP is that it is other.

This otherness is demonstrable from this data in two ways; the first is that EBP is worn like a badge by the profession. It says something about the profession when others can see that chiropractic is evidence-based. That 'something' is generally, although not universally, regarded as beneficial. EBP in this sense is seen as benefiting the profession. It is not about good practice or therapist's excellence or good patient care, it is about professional advantage. From these interviews one gathers a sense that EBP is an unwelcome but necessary part of modern health care for chiropractors.

The second part of this theme represents the way that chiropractors engage in EBP in their own practice. With some exceptions the majority view the paradigm as an option and one which they often even proudly renounce. Mary encapsulated a general sense that EBP was almost irrelevant.

Keith: [00:22:44] "... Do you think it [EBP] helps or hinders your practice? "

Mary: [00:22:57] "I would say I'd sit on the fence and say it does neither. I don't think it impacts on me hugely at all."

Here, Mary is referring to a concept of EBP that is primarily about research evidence. There is an overriding sense that research and evidence is produced by someone else - it is other. However, it goes beyond this sense of disconnection in that it is as if it will never be necessary *for practice*. Practice and 'evidence', at least the sort of evidence that they perceive EBP is made of, appear to be very separate in these chiropractors' eyes. The act of practice seems to be viewed as unquestionably therapeutic. It does not need other sources of evidence to justify itself. It is self-justifying. Perhaps therefore these chiropractors view EBP as almost superfluous to requirement. If their practice is informed completely by their own experience, then what is the point of EBP?

Chiropractors seem to wish for the respect that being viewed as evidence-based brings to bolster their own cultural authority. However, they also seem to view the paradigm as not relevant to their practice. This suggests a disparity. This is explored further in the next theme entitled 'An incongruence of thought'.

4.2.Theme 2: 'An incongruence of thought'

In the first section of this chapter, these chiropractor's relationship with EBP identified as being 'other'. This means that chiropractors view it as a concept that professionally confirmed benefit but personally was, at best, irrelevant. EBP was viewed as created outside the profession and not by the profession with the implication that if was created within the profession it would be different. In the following section the evidence of an incongruent approach to EBP will be explored.

4.2.1. Professional and Personal EBP

The participants had a different view of EBP depending on if they viewed it from a professional or a practice perspective. When asked if they thought that EBP was a

threat, most thought that it was not or claimed to be in two minds. Their reasons for seeing EBP as not a threat but beneficial were mostly around how the profession was perceived. Grace put it succinctly.

Keith: [00:04:11] “OK some chiropractors think that evidence-based practice is the way forward for the profession. Some chiropractors think it's quite a threat. What do you think?”

Grace: [00:04:25] “I think that we.. we really need evidence base because ...because of what the public perceive, so in a way, it protects us, it justifies us.”

This view regards EBP as a professional concept suggesting these chiropractors are more interested in identity when it comes to the use of EBP. And yet, as we have already seen earlier when discussing the sense of ‘otherness’ chiropractors have when talking about EBP, as a personal concept it is viewed as irrelevant at best. This incongruence may be for two reasons. Firstly EBP is often criticised for not being relevant to real world practice (Greenhalgh et al., 2014). In EBP, population estimates derived from frequentist interpretations of data drive statements about evidence using systematic reviews and meta-analyses (Greenhalgh, 2014, p.1) . This is called into question because of its lack of relevance to the individual patient. A similar position is articulated in the group.

Sam: [00:24:29] No, I’m aware of its value [EBP], you know, I am a supporter of evidence-based practice, I can see its value, but I can also see..no I think I can see its shortcomings as well. So, it has a place but it's.. it's certainly.. you can't.. so you can't apply the results of a big cohort of people to an individual.

On the face of it this is a view many health care practitioners would relate to. However, when put together with the findings from the observation of Sam, this position becomes a little more nuanced. Sam exclusively used approaches to the treatment of his patients that might be considered to lie outside the normal provision of evidence-based manual therapy. He used a treatment called B.E.S.T

Bio Energetic Synchronisation Technique or B.E.S.T uses concepts that are ill defined and therefore resistant to recognised methods of testing and measurement. The technique’s web page reports that it is ‘a system of health care that is state of

the art in balancing body, mind, memory and spirit energy fields, and enhancing the flow of that energy throughout the entire system. It is a whole-body healing technique' (Morter, 2021). It involves holding 'pulse points' and applying gentle pressure in a specific sequence to various points on the body, to access 'mind body healing'. One single cohort study reports an improvement in 'chronic pain related conditions' in 5 weeks after treatment with B.E.S.T technique with no attempt to compare with another intervention or control (Rupert et al., 2005). An RCT with good standards of internal validity demonstrates equivalence of B.E.S.T to other chiropractic care for chronic MSK care but does not include a control (Hawk et al., 2006).

Sam did not use any SMT, exercise prescription or lifestyle advice. In my field-notes taken directly after the interview and observation, I report.

"His was a very holistic approach. Having said that he didn't talk to any patient whilst I was there about life habits like smoking, drinking, weight and particularly exercise."

Field Notes Sam 11/05/2018

Both in his answer to the question about EBP and in the observation Sam displays a disconnection with EBP. He supports the concept but not enough to engage with the process in his treatment room. He was able to make a statement about deriving individual care from a large cohort and yet when asked what type of research would be likely to change his practice, he showed me a flyer from a nutrition company. Using a leaflet in answer to a specific question about research might just be a misunderstanding. He made no attempt however to clarify or forestall any criticism of the source of this knowledge. To him, it was evidence-based.

In the interviews chiropractors rarely engaged with the standard criticisms of EBP (Sam was an exception). Often, I asked how the chiropractors had engaged with EBP in the treatment of patients during the observed session. Some denied that it had any relevance but those that engaged with the argument saw it as a hindrance to their expression of health care. Therefore, the second reason that chiropractors might be incongruent about professional and personal EBP is that it suggests a

duality of identity.

EBP has become a way of being in health care practice. Arguments over its veracity, interpretation and role exist but still the paradigm is predominant enshrined in the codes of practice of most of the regulators of health care in the UK. EBP therefore, through its ubiquity, is part of the identity of those engaged in health care in the UK. Chiropractors see the personal aspect of EBP as non-relevant or restrictive and other to their practice. They are therefore declaring that in a personal sense, in a chiropractic sense, that they do not feel that EBP is important. The wish to be part of the orthodox health care provision in the UK and yet reject the predominant ethos informing orthodox health care decisions is, at the very least, an incongruence. In my case it produced a dissonance which was impossible to ignore (see section 1.2)

This sense of disconnectedness leads to a position of incongruity when talking about EBP. EBP has some social desirability among chiropractors or at least it does when EBP is assumed to equal research. However, a significant body of evidence that supports the passive care, centred on the manipulation that chiropractors typically deliver, is absent. The position therefore becomes “EBP is desirable; we are not evidence-based.”

This might lead to cognitive dissonance where two competing positions vie for dominance. On the one side there is the belief that EBP is not a threat and professionally desirable. On the other side there is an idea that the evidence (or research in support of chiropractic treatment) does not exist. If these two positions are to be held concurrently without some uncomfortable cognitive dissonance, then one or other of these positions has to be explained away.

4.2.2. Social Desirability

Although Chiropractors see EBP as ‘other’ (see section 4.1) they also see it differently depending on which perspective they consider it. They talk about EBP differently when they consider it a professional issue in contrast to when they talk

about it as something that they personally should engage with.

They have a dual relationship with EBP, one which is about their identity and professionalism and one which is about their personal theory of practice. In the former they acknowledge the benefits that being seen to be evidence-based confers upon the profession. This would adhere to a societal norm, at least in the healthcare professions. It has already been established that EBP is an expectation of chiropractors and is written into their standards and education (General Chiropractic Council, 2010; General Chiropractic Council, 2018). In their personal theory of practice, their relationship to EBP and how it affects their day-to-day practice is different. More than one of the participants denied that their practice was evidence-based when asked directly. A number of other participants cited EBP as an obstacle to advanced care. Even though they see EBP as desirable on a social level they do not see it as desirable in their practice.

In order to explain this observation, it is useful to look at the concept of social desirability bias in surveys. In the surveys looking at chiropractors' attitudes to EBP it has been noted that chiropractors along with a raft of other health professionals state that they have positive attitudes towards EBP (see section 2.5). In contrast, when interviewed face-to-face these chiropractors question the value of EBP when applied to their practice. One explanation for this disparity may be the social desirability of the use of EBP.

Social desirability bias takes place when questions involving a departure from societal norms attracts answers that do not accurately reflect the participants views. An important theoretical position regarding social desirability was proposed by Delroy Paulhus in his two component model (Paulhus, 1984). Paulhus suggests that this bias can be explained in two ways; firstly, it can be a form of self-deception and secondly impression management. The surveys previously mentioned in the review were all anonymous and therefore it is possible that the chiropractors were not attempting to manage the impression of, or deceive, others. (Paulhus tactfully refers to it as 'consciously dissembling' (Ibid p599)).

In this study as no anonymity between participant and researcher existed, they

may have been trying to impress me as I am a chiropractor and one of their peers. Not only that but I am an older person, and they may (I do not assume) have seen me as a respected colleague to whom they wished to present a favourable impression. I may therefore represent to these chiropractors the very thing I am trying to push past, namely authority or convention or professional credibility.

Hammersley discusses the various 'field relations' between participants and researcher and concludes that there is an inevitability about the 'reactivity' between the two (Hammersley and Atkinson, 2007, p.96). The researcher must be aware of this and as far as possible bring it under 'analytic control'. Whilst 'analytical control' is to be desired, it is difficult to see how any interaction with research participants does not imbed some aspect of 'reactivity' if one is to understand the constructionist ontological position upon which this study is based. Hammersley describes strategies to cope with this reactivity but carefully does not say that these reactions can be avoided all together in this sort of study.

In trying to overcome this 'reactivity' I used two techniques; firstly, I interviewed after I had observed. This allowed prolonged exposure to the participant and hopefully put them at their ease. Secondly, I used language that hoped to explore rather than challenge their views. I made a very conscious effort to hide my own views about EBP so as not to influence theirs. It is however, better to admit to this reactivity and explore it rather than attempt to fashion unsatisfactory 'strategies' in an attempt to deny their influence on the data. Hammersley's strategies are often rooted in a view of the ethnographic gaze as a vision of an independent social reality (Hammersley, 1992). This is at odds with a constructionist ontological claim that no such thing exists when social situations are reported and examined by two parties (Banfield, 2003)

In summary, the two ideas that these chiropractors consider EBP as 'other' and that they view EBP in two different ways dependent on their professional or personal stance might link to a suggestion that the social desirability drives their answers. When speaking about the profession, chiropractors seem to wish to belong to the greater healthcare community. The idea of social desirability helps to explain this

finding. When considering personal practice and discussing it with another chiropractor (me) they are much more willing to depart from an idea of health care that is driven by their perception of EBP which itself centred around research.

4.2.3. Incongruence in EBP

The incongruence of these participants ideas of EBP depending upon the view from which they observe it was not the only inconsistency noted regarding their relationship with EBP. In the interviews, arthroscopy lavage or wash out for meniscal repair and early osteoarthritis (OA) was used as an example of a treatment that had been shown to be no more effective than the cheaper less problematic intervention of exercise and yet arthroscopies were still being offered for early OA (O'Connor et al., 2022; NICE, 2007; NICE, 2018). This position was compared to that of chiropractors manipulating people with acute low back pain, where the evidence is that advice, reassurance and time is more effective (NICE, 2020).

When this was raised the replies were confused and incongruent. Two participants suggested that arthroscopies should not be offered because they were only treating one area and not the whole person. The implication is here that because chiropractors treat more than just the problematic area, they are justified in using non-evidenced treatments. Both Helen and Rob made the same point when being asked to comment on the apparent discrepancy between the evidence on arthroscopy and the practice.

Keith: [00:33:02] "No but if you take evidence-based practice to be research and lot of people do, then the research is fairly incontrovertible. You know it's been done to death. Osteoarthritis, early osteoarthritis of the knee.. you shouldn't be doing arthroscopy as your first line of call which is what's happening. So, they got the same conundrum as we have with acute low back pain. So, I'm just trying to explore you know, how.. how.. how do we differ then? We carry on because we 'know'; what do they do?"

Helen: [00:33:43] "Yeah exactly what do they do? They have to stop because they're doing one area, they're.. you know, they're going in to do that procedure. They're saying that it's not helping. We don't do that."

Keith: [00:33:54] "OK, so, we're doing something different."

Helen: [00:33:58] "Yes. Exactly what you mean and that is the similar thing. The only difference I would say that is like I say they're going in to doing a procedure in one place."

Rob: [00:18:42] "You know it's not really involving the person very much except to the extent that whether they actually do the exercise and lose weight and the rest of it which is more important anyway.....they're not treating the patients they're treating the disease."

And yet, in the observations, both participants used manual treatment as their most important tool in the treatment of their patients.

Doug links the practice of arthroscopy to personal gain and yet fails to realise the incongruence of his own and other chiropractor's practice of manipulating most patients on each visit regardless of the condition for which they are treated.

Doug: [00:14:18] "Well exactly this is the problem you see. You see if you're making your money by taking x rays or making your money by doing lavage work on a knee."

Keith: [00:14:30] "...or manipulating acute low back pain."

Doug: [00:14:31] "or manipulating acute low back pain, you're going to keep doing them. You ask a builder to build your house. If he's a wood builder, he'll build you a wooden house."

Dot demonstrates some incongruity by suggesting that EBP opens the profession to information that does not support chiropractic treatment for certain conditions but then follows this remark by suggesting that 'good quality' research would overturn this.

Keith: [00:11:01] "So some chiropractors think that EBP, evidence-based practice, is the way forward as a profession and some people think it's a threat. What do you think?"

Dot: [00:11:11] "Good question. And I'm on the fence with both because yes, you then open yourself up to a large volume of information that says actually chiropractic doesn't work for X Y Z but then if you do some good quality research that does prove its good for X Y Z."

These inconsistent positions around the subject of EBP further demonstrate that

these participants had an incomplete and unresolved conception of EBP. It is unsurprising given the difficulty they have with defining the concept of EBP demonstrated earlier. If this finding were to be uncovered in a wider population of chiropractors, it would serve to bolster the earlier argument that the results of surveys of the attitudes, beliefs and knowledge of chiropractors of EBP are open to misinterpretation. If chiropractors have a limited understanding or at least an unresolved conception of what EBP is, they are prone to misrepresenting their relationship with it when asked.

So far, we have suggested that in these chiropractors there is an incomplete understanding of what defines EBP as well as an inconsistent or incongruent approach to how EBP might be applied in practice. The relationship these chiropractors have with EBP might be left there – an incomplete and unresolved interface with a modern, ubiquitous health care paradigm. However, there might be a deeper reason that these chiropractors view EBP in this way; in the next section we see how the participant's therapeutic behaviour might link to a deeper and more theoretically driven explanation for this incongruent and incomplete interface with EBP. I describe a performance, noted in the observations, that was linked to subsequent declarations of congruence with EBP. The more bounded and repeatable the 'dance' from one patient to another, the less the participant seems to regard the paradigm of EBP as relevant to their practice. This finding will be explained in terms of a technical rational approach to practice and an aligned objectivist ontology.

4.3.Theme 3: 'There's a dance to be had'.

After our observation, one of the participants, when asked about how she applied theory to the practice of seeing a patient, replied

Faith: [00:07:40] "...There's a dance there to be had."

Whilst this also appeared to be referring to the process of getting to know the

patient as she explored treatment options, it also gave life to an observation I had made. Chiropractors seemed to 'perform' as they examined patients, particularly new patients but all patient visits seem to attract a version of their own 'performance.' This performance was pronounced in some, more than others, and seemed to be either highly formulated or fluid. Nevertheless, it was, once noted, relatively easy to spot.

The performance, or dance, had steps that were mostly repeatable from one patient to the next and revolved around a pattern of testing function or palpation of joints or spinal segments. The performances were quite individual to each chiropractor and appeared to follow a similar pattern with each patient.

Performances, or a series of physical investigations, like these are quite common in musculoskeletal practice. They are taught and tested in HEI's. For example, there are a range of tests that one might do for shoulder pain. Therapists will often have their own order of doing these tests which may reflect the context in which they are working, their clinical reasoning, their memory or knowledge of such tests or indeed simply their preference of how they apply these to the condition and patient being examined.

In my own practice, I had a suite of these 'performances' which I would use depending on the verbal history that I had received from the patient. These performances changed over the years of practice, with experience, expertise and further knowledge. In retrospect, they were an obvious part of my practice. Chiropractors or MSK therapists observing me would have recognised their existence and no doubt brought some judgement to bear on their utility. In this study I have worked hard to try and not make judgements about the utility of these performances. Instead, I have tried to understand them from the perspective of the practitioner.

Each chiropractor had a different performance. It was the repeatability of that performance between patients, regardless of condition, that became a noticeable phenomenon. When chiropractors in this study had a performance that was

recognisable and somewhat regimented and repeated regardless of the patient, in the subsequent interviews they appeared to have a distant relationship with EBP, some quite explicit in their rejection of the use of EBP in practice. In contrast, chiropractors who had performances that seemed to change depending on the patient before them, had a more congruent attitude, regarding practice and theory as linked to more than simply the craft of chiropractic.

4.3.1. A Reflective Discovery

This observation and subsequent interpretation were not immediately apparent. I had noticed the performance aspect nearly halfway through the data gathering period. Rob's interview, my seventh, promoted the first mention of this in my field notes, recorded into my Dictaphone directly after the interview and transcribed later.

".. so, in terms of similarities he was.. he had these performances through his patients. What I came to term as a bounded performance. A performance that is only slightly different from one person to another but performance nevertheless and it's almost a dance that both the patient and the chiropractor enter into. It's a willing.. a willing dance and performance and the outcome is judged by what the patient says or sometimes by things like muscle testing. So, I've seen this repeatedly."

Field Notes Rob 29/05/18

The script here mentions 'bounded performances' and the term 'dance' and that I had seen this before in previous observations. This precedes the interview with Faith where the word 'dance' resonated so deeply (see above). Faith was interviewed a year after these notes were made.

This link and observation could be seen as emerging' from the data. Braun and colleagues issue guidance on the concept of emergence (Braun et al., 2019, p.854). They deny that this is possible suggesting that themes are "the product of deep and prolonged data immersion, thoughtfulness and reflection" (Braun and Clarke, 2019, p.591). In other words, they are an interpretation, they do not lie somehow hidden within the data, awaiting discovery. I mention this because my role as 'observer as participant' here was crucial to articulating this theme (see section 3.2.4).

As a practising chiropractor I failed to note the significance of these performances early on because they are so integral to the patient interaction. The performances themselves were camouflaged. They were expected and normal in the chiropractic world explicit in these observations. They were camouflaged because these performances blended in with what I took to be the normal practice of a chiropractor. They did not stand out because all my assumption was that all chiropractors, including myself, used these routines. It took reflection and, essentially, an iterative interpretive process to create the possibility of the connection between performance and EBP. This is consistent with the underlying ontological premise of this study and with a position reflecting a Constructionist stance where “social phenomena and their meanings are continually being accomplished by social actors” (Bryman, 2016, p.29). This necessarily involves an interpretive act on the part of the researcher, and that will have reflected my 30 years’ experience as a chiropractor and should be judged with that in mind. The following is a section from my reflective log written shortly after observing and interviewing Ronnie, my eighteenth participant.

“And what about performance. Today I fully expected to see a lack of performance as I know the individual and I felt he might be someone who would attend to EBP. I was therefore a little disturbed to discover that a performance was taking place, more than the fact that we saw the same sort of patient, but he did the same thing in the same way to each patient. This similarity would suggest that he is not really doing EBP because the patients were different even if they had the same conditions. They were female and male and also old and younger. There of course must be some similarity if the generality of the conditions is the same. But must they be exactly the same? Maybe there are subtle differences - differences of strength or pressure. Different sites in the spine that are difficult to spot from an observer’s point of view. But no, it was more about how he put his towel. How he asked the patient to get on to the table - the whole thing appeared to be choreographed. I can’t get this out of my head that this must be some sort of ritual or performance or dance that is enacted upon patients in the name of the God of chiropractic regardless of how religious we think it is. “

Reflective Journal 25/02/19

My difficulty with explaining this phenomenon is clear here although I begin to draw the conclusion that there might be a link between performance and adherence to EBP. This observation was some time in forming and by the time I started to really think about this process and how it might link to the practitioner's thoughts about EBP, I was unable to question them. Tackling this issue subsequent to the data collection would have required revisiting each participant and observing and interviewing them. The scope and word limits of this study suggested that this would not be time well spent. This could be a very useful premise for further research. This topic is covered in the conclusion (see section 6.3).

It is useful to regard these performances as a type of ritual. Ritual behaviour in a health care setting has been described in nursing. There is discussion about the definition of the term as it often refers to a symbolic action that has no purpose but that is directed at managing anxiety or maintaining social structure particularly in uncertain and stressful health care situations (Philpin, 2002). Rituals have also been described as detrimental; Ford and Walsh call rituals a 'straightjacket' (Ford and Walsh, 1994, p.23). Whilst others call them transformative; an 'unseen power' in the pursuit of a holistic approach to nursing (Catanzaro, 2002). Much of the discussion situates nursing within the social norms of a hospital environment and sees rituals as part of the power expression between doctor and nurse and often in terms of female roles (Martin, 1998). Chapman divides these interpretations into a social and a psychological meaning entreats a consideration of both perspectives when understanding rituals (Chapman, 1983)

In these participants a psychological approach seems most appropriate as most chiropractors practice alone in a room. Although their interaction is unobserved by colleagues however, they interact with the patient. They have a social relationship with the patient that has an implication about where power may lie between the two actors. The discussion of the power dynamic with reference to the use of ritual by Martin asserts that

"...the patient becomes an object within the structured routine of care and any control he/she may have is limited by the narrow framework of their sick role."
(Martin, 1998, p.190).

The participants may be using these rituals or performances to limit the patient's input into the therapeutic interaction because for them, these interactions have limited flexibility. They are protocols set by alumnus or CPD but nevertheless are unchallenged by the individual circumstance. In the next section this rigidity is explored, and an explanation offered.

4.3.2. The link between performance and EBP congruent ideas

The characteristics of these performances which made them noticeable was their rigidity or fluidity. They were either the same for each patient regardless of the individual circumstance or they were fluid and reactive. I noted that the more fluid the performance the more congruent the participant seemed to be with notions of EBP. There was also another observation that should be noted. In my perception, those that performed in a more fluid way aligned to those tests and procedures that seemed more appropriate to the condition of the patient and the condition that they were consulting for. This of course means that they were aligned to my version of the evidence and my version of the evidence may or may not align with EBP. Nevertheless, the key factor was this fluidity. By this I mean that the performance changed seemingly in response to the findings or responses of the patient.

The rigidity of the performance of some of the participants might suggest a lack of response to the patient's condition. Patient centred care is an important part of EBP (Sackett et al., 1996). It is a key part of the definition and practice of EBP. Part of patient centred care is to treat each patient according to their own needs and requirements. Fix and colleagues claim it "fully integrates the patient's perceptions, needs and experiences, into every phase of medical consultation, treatment and follow-up" (Fix et al., 2018, p.301). Each patient will therefore present unique challenges. It follows that the performance will be different for each patient who is seen. So far this rigidity of performance suggests that the participant is keen to follow a protocol, or a set of bounded rules, and hesitates to deviate from them regardless of the patients' wishes.

This rigidity of practice has characteristics similar to the descriptions of technical rational professional practice, first described by Schon (Schon, 1983). Thomson and colleagues referred to this, and its opposite, professional artistry, as 'conceptions of practice' (Thomson et al., 2014a). The various attributes of these conceptions have been helpfully drawn out by Fish and Coles (1998). (Table 7)

Table 7: Two views of professional practice. Adapted from Fish and Coles (1998) p41.

Technical–Rationality	Professional–Artistry
Follows rules, routines and prescriptions	Starts where rules fade, sees patterns and frameworks
Uses diagnosis and analysis	Uses interpretation and appreciation
Wants efficient systems	Wants creativity and room to be wrong
Sees knowledge as graspable and permanent	Sees knowledge as temporary, dynamic and problematic
Theory is applied to practice	Theory emerges from practice
Visible performance is central	There is more to it than surface features
Setting-out and testing for basic competency is vital	There is more to it than the sum of the parts
Technical expertise is all	Professional judgement counts
All professional activities are masterable	Mystery lies at the heart of professional activities
Emphasizes the known	Embraces uncertainty
Standards must be fixed, measured and controlled	That which is most easily fixed and measurable is also often trivial
Emphasizes assessment, performance appraisal, inspection and accreditation	Emphasizes investigation, reflection and deliberation
Change must be managed from the outside	Professionals can develop from the inside
Quality is really about the quantity of that which is easily measurable	Quality comes from deepening insight into one's values, priorities and actions
Technical accountability	Professional answerability

4.3.3. Technical Rationality and Professional Artistry

The difference between Schon's Technical rationality and Professional artistry has its basis in the lived experience of the uncertainty of the professional in practice. He described the problems professionals face as 'messy' in that they are complex and defy easy categorisation. Crucially he identified that the skills a professional uses were not sufficient on their own to understand a professional's actions and purposes (Schon, 1983). The rigidity in some of these participants actions as they examined patients suggested an adherence to a set of procedures or skills which were not altered regardless of the patient upon whom these skills were being visited. The participants were following rules. A number of participants linked EBP with guidelines or rules. Abby said it thus when asked what EBP meant to her.

Abby: [00:01:18] "Evidence Based Practice, I guess is, to me .. a protocol or guidelines that you'd follow in the sense of treating a certain musculoskeletal disorder so like acute neck pain or acute back pain those sorts of aspects. You know once every week for six weeks or something like that. NICE guidelines, those sorts of things along those lines."

Her answer refers to a regularity and an uncomplicated adherence to guidelines or treatment regimes. Further in her interview she expands on her experience of her alma mater.

Abby: [00:12:45] "...they teach us a lot .. the palpation skills.... I really enjoy the pelvis because it's ...There's so much more than just, sort of, what you saw today. There's a lot more levels that we could go to if they had real pelvic issues, but I think they teach us to be very, very.. not necessarily confident, but with the patients, talking, communication wise I find really important and explain what you're doing even if it's in layman's terms..."

Here Abby refers to levels (of knowledge) that she might visit if needed and that might be explained to the patient in layman's terms. These sentiments suggest that her understanding is linear, and skills based and that her interaction with the patient is one where she has to translate the understanding 'in layman's terms.' Taken with Abby's sense of rigid performance this might suggest that her outlook is one where

the world is an ordered and predictable place where knowledge can be acquired and applied to any given situation. It is a world where she is the gatekeeper to this understanding for patients. There is little room here for the patient's own views and collaboration.

This approach is consistent with a technical rational approach to professional practice. Schon describes the approach as instrumental problem solving using a specific bank of codified knowledge gained through traditional pedagogic means (Schon, 1983 p40). He traces the emergence of positivism and the prioritisation of theory generated in a place other than practice as key factors in this approach. He further opines "But with this emphasis on problem-solving, we ignore problem setting, the process by which we define the decision to be made, the ends to be achieved, the means which may be chosen." (Schon, 1983, p.40). The problem solving, he refers to requires agreements about 'ends'. By this he means results or outcomes. The implication here is that the 'ends' are agreed upon by the professionals, not the patient. In the uncertain world of practice where human expectation and suffering is concerned this approach fails to recognise the uniqueness and value each human brings to the healthcare enterprise. The 'means' in many ways are as important as the 'ends' and they should be developed and enacted using clinical expertise and patient values if we are to refer to it as evidence based.

Schon began a move towards more reflective practice where both the propositional knowledge so esteemed in the technical rational approach to practice and an acknowledgement that good practice goes beyond a simple understanding of a skill or competence. This contrasts to the practice of Abby and some of her colleagues where skills are applied to the patient in a manner that does not take sufficient account of the individual.

4.3.4. Technical Rationality and Ontology

The position taken by Abby suggests a certain ontology. This might also be related to her view of knowledge and how it is gathered. If a patient and their

problems are approached through the lens whereby the professional uses only their specialised knowledge to discover a root cause, it suggests that disease and ill health are self-contained circumstances visited upon humans and untouched by individual circumstance. The patient's condition is almost a separate entity which is objectively discoverable, can always be appropriately treated, and a predictable outcome achieved. This ontological view regards facts as unaffected by the values or interpretation of those perceiving them. Professional artistry, whilst not denying the existence of normative practice, admits to the complexity and uniqueness of each individual and therefore approaches the whole enterprise of health care differently (Higgs and Titchen, 1995, p.525). This is one where the 'truth' of a person's condition is co-constructed between practitioner and patient. The patient might have a different idea of what is important about their illness journey and this goal should be identified collaboratively early on.

This difference in approach in the technically rational and the professionally artistic aligns well with two ontological outlooks of which we have spoken before regarding the central theoretical underpinning of the research stance taken in this investigation. An objectivist viewpoint aligns with the technical rational. Both these concepts regard knowledge as 'graspable and permanent' and therefore measurable in a repeatable and reliable way. A constructionist ontology admits the complexity of health problems, where facts and knowledge about them are tainted with the values and bias of the practitioner or the patient (Green and Thorogood, 2014, p.17). This much better aligns with a professional artistry, comfortable and inquisitive about the inherent uncertainty that the care of musculoskeletal problems present.

4.3.5. Technical Rationality and views of EBP

EBP is traditionally made up of the three domains of best evidence, clinical expertise and patient values. In an earlier section we looked at the criticisms of EBP and noted that many of them were criticisms of quantitative science instead of fundamental ways of appreciating knowledge and applying it to patient care (see section 1.5). We have also seen how these participants seem to view EBP in a similar light, using words like 'research' and 'science' when describing the concept

(see section 4.1.2). The participants therefore have a view of EBP regarding it more as an interpretation of quantitative science than the rich and complex mingling of patient values, clinical expertise and most relevant research knowledge.

If this is the way that the participants view EBP then they are, perhaps unwittingly, adhering to an objectivist view of the world or at least of science. Quantitative science is underpinned with an objectivist ontological stance, one which resonates with an idea of knowledge as graspable and permanent and independently measurable (Bryman, 2016). Protocols or rule-based performances of examination or treatment are not inconsistent with this approach however using the performance of examination in unique and patient informed ways might be. Using performances variably from patient to patient, reflecting their individuality, would be consistent with the professional artistry described by Schon and therefore the constructionist ontology inherent in it.

The relationship with theory and how it relates to practice is important here. These participants have gathered their theory from their schools or from courses. When asked if they recall where they obtained the knowledge used during the sessions observed, many said that their colleges and courses attended were important. Seb gave a typical answer.

Keith: [00:16:45] "So how much of what you did today for instance did you learn there" [his Alma Mater]?

Seb: [00:16:52] "Most of it. Yeah, I'll give them credit."

Annabel infers that college-based knowledge is a gold standard measure of knowledge.

Keith: "Would you say that you take what they [her Alma Mater] say, not as gospel but with some considerable authority?"

Annabel: "Yeah, definitely. I think that being a new grad I feel now like I should be at my peak of my knowledge if that makes sense."

If they apply it to their work in a rigid manner, which a repeated unaltered

performance suggests then they will expect outcomes or 'ends' that have been agreed upon by academics or luminary practitioners in university or on courses who have formulated this theory. If the ends are not achievable or perhaps do not match the expectations of the theory led practitioner, then a certain dissonance might set in. To settle this dissonance or incongruence, these participants might begin to privilege evidence from their own senses over and above other knowledge.

Seb earlier claimed that his Alma Mater informs most of what he does. As a demonstration of this possible incongruence, Seb later says.

Keith: [00:13:55] "What.. what role do results have in the way..that fashions the way.. that you treat people...."

Seb: [00:14:10] "I think experience plays a huge role. Yeah, I think I'm much better at what I do earlier in the treatment than I was."

Keith: [00:14:19] "you didn't get that from evidence."

Seb: [00:14:21] "No."

Keith: [00:14:21] "You got that from experience."

Seb: [00:14:22] "Yes."

4.3.6. Summary

A performance or dance has been described where the participants were observed to repeat clinical activities either of testing or treatment which, for some, did not differ from patient to patient. This was linked to a professional practice described as technically rational which in turn was underpinned with an objectivist ontology. This was contrasted to a professional artistic mode of practice. Suggestions were made as to why this might affect the relationship these chiropractors have with EBP.

In this chapter I have described three themes. All three go to the heart of the ways that chiropractors view the concept of EBP. They suggest that chiropractors in this sample have a view of EBP that is different dependent from which point of view

they perceive it, may inform, or at least correlate to, a rigidity in their examination procedures and has some incongruence that may lead to dissonance. In the following chapter a further theme is presented that explores the relationship these chiropractors have with knowledge and how knowledge, EBP and their practice are entwined.

5. Chapter 5: Results and Discussions 2

5.1. Theme 4; 'An imbalance of practice knowledge'

The theme 'An imbalance of practice knowledge' reflects the sources and descriptions of knowledge that chiropractors use in their dealings with patients. In this theme I shall describe how chiropractors appear to favour a knowledge base built from their professional experience and then I shall investigate the possible implications of this finding upon their practice epistemology. To structure this discussion, I adopted a framework of practice knowledge developed by Higgs and Titchen (1998). In the next section therefore, it is important to describe this framework or taxonomy.

5.2. A Taxonomy of practice knowledge

5.2.1. Propositional and Non-propositional Knowledge

Evidence-based practice in essence is a mechanism for health care workers to evaluate the knowledge they need to make decisions (Thomas and Young, 2019, p.144). Decisions about healthcare are the product of an interaction with practice knowledge. How chiropractors interact with the practice knowledge that they possess, and also derive from their patient encounters, is key to understanding their relationship with EBP.

To provide some structure around the exploration of chiropractors practice knowledge, I have adopted a description by Higgs and Titchen (1998). In a landmark paper, they propose a taxonomy to explain how healthcare workers verify or 'lay claim to' the knowledge they use in their work. They outline some of the paradigmatical assumptions underpinning types of and ways of knowing. They describe the empirico-analytical, the interpretive and the critical paradigms. The empirico-analytical paradigm is one where knowledge is treated as retrievable,

untainted by values, quantifiable and, crucially, objective. The interpretive views knowledge as an interpretation or an attachment of meaning and significance to ideas and events. The critical infers that knowledge is socially constructed but further is informed by the values of the researcher and promotes understanding about how to transform current structures relationships and conditions which constrain development and reform (Higgs and Titchen, 1995). Higgs and Titchen suggest that the empirico-analytical has been privileged at the expense of the others in the development of professional healthcare knowledge (Higgs and Titchen, 1998; Higgs and Titchen, 1995).

They posit two basic types of knowing; propositional, and non-propositional (see **Figure 8**). The division here might be fashioned as the difference between knowledge that is used, acquired or created through external codified sources and that which is used, created or acquired through practice. Codified in this sense means informed by the research and scholarship of others often in the form of guidelines. It implies that the information is written down or perhaps typed. Practice in this sense would refer to an internal dialogue in response to, or in the performance of, professional activity. It is, in essence, Schon's 'problem setting' - "the process by which we define the decision to be made, the ends to be achieved, the means to be chosen" (Schon, 1983, p.40). This latter is often tacit and difficult for the practitioner to describe. Fish and Coles describe it as '..invisible, even elusive' (Fish and Coles, 1998, p.255).



Figure 8: Diagrammatic representation of Higgs and Titchen's Taxonomy of Practice Knowledge (Higgs and Titchen 1998)

Non-propositional knowledge is further split into two, professional craft knowledge and personal knowledge. Professional craft knowledge, the term used by Titchen and Ersser (to which they attribute Brown and McIntyre (1993)) arises from professional experience (Titchen and Ersser, 2001, p.35). Personal knowledge arises from personal experience. Professional craft knowledge is gained and created in practice through the 'doing' of health care; it is often tacit and difficult for the practitioner to describe. Personal knowledge is related to the values, contexts and personal experiences that chiropractors use in their dealings with patients.

In terms of this study, I looked for codified courses of knowledge by asking about knowledge learned at college or from CPD courses or reading articles or books. I asked very open questions about where else knowledge for action came from in an

effort to find the words of the participants as my guide. With these broad conceptions of knowledge, I ordered the data firstly into coded patterns of similarities and differences and then began the task of interpreting what I saw.

5.2.2. Non-propositional knowledge and tacit knowledge.

One of the challenges that became apparent is the tacit nature of the professional craft and personal knowledge expressed. It made it difficult to both identify in participants but also difficult for the participants themselves to express. Mattingly observes that a large part of experts knowledge is tacit (Mattingly and Fleming, 1994, p.24), Higgs and colleagues call it 'wordless understandings' (Higgs, Richardson, et al., 2004, p.60). Polanyi describes it as 'more than we can tell' (Polanyi, 1966, p.4). It is a particular challenge when asking practitioners who find it difficult to articulate their reasons for decision making to pass those processes on to students (Greenhalgh, 2002). If this knowledge is tacit, it is difficult to express, and therefore difficult to capture in an interview. It is recognised that the participants themselves may well be unable to describe the sources of their knowledge.

This surfaced in the data as participants were confronted with direct questions about where they obtained a particular piece of knowledge. For example, Doug was equivocal about an important assumption he repeatedly made in the interview.

Keith: [00:15:23] "Why do you think it then. What has brought you to the point where you think that, you know, and to some extent being devil's advocate here, but what brought you to the point of thinking that actually manipulating someone encourages neural function.

Doug: [00:15:39] I don't know what it encourages because I could guess all sorts of things."

And Dot was more explicit about the lack of source for her information about a chiropractic technique called SOT (Sacral Occipital Technique)

Keith: [00:05:13] "And that's very much an SOT idea."

Dot: [00:05:14] "Yes. Yes."

Keith: [00:05:18] "Where did that come from? ... What's the basis of [that] information?"

Dot: [00:05:25] "I couldn't tell you. I never ask that question."

John also had trouble identifying the source of his assertion that children have bad posture.

Keith: [00:34:14] "So what's your reasoning behind that? Where did you get that information from?"

John: [00:34:20] "Why..... That's a good point. I couldn't tell you."

This phenomenon has to be taken into account when analysing these data. The interpretation must recognise that there may be a limit to how well these participants can express the various sources of their practice knowledge. Without this understanding the analysis might mistake the difficulty of identifying a particular source of knowledge for a particular practice action for a knowledge inadequacy. Instead, this may simply be a demonstration of the tacit nature of non-propositional practice knowledge.

I have outlined above a taxonomy with which I am going to explore the data regarding participants' practice knowledge. In the next section I explore the data to demonstrate how the theme 'An imbalance of practice knowledge' came into being. To begin with I shall describe the different types of practice knowledge that appeared in the data. Having identified the character of this practice knowledge I shall explore its implications.

5.3. Propositional - Codified Knowledge

5.3.1. Knowledge from Alma Mater

When referred to, the propositional knowledge that these participants use most is that which they obtained in the HEI from which they graduated.

Keith: [00:06:14] "Would you say that you take what they [lecturers and tutors] say, not as gospel but with some considerable authority?"

Annabel: [00:06:17] “Yeah, definitely. I think that being a new grad I feel now like I should be at my peak of my knowledge if that makes sense.”

Annabel expects this type of knowledge to wane as time passes. Seb feels he must qualify why he gives an answer to a similar question.

Keith: [00:16:45] “So how much of what you did today for instance did you learn there [College]?”

Seb: [00:16:52] “Most of it. Yeah, I'll give them credit.”

He wishes to ‘give them credit’; he has to remind me and himself that college did play a role in his learning. The participants seemed to have a cautious relationship with the knowledge they gained in college. They almost grudgingly acknowledged the role that higher education played. Whenever I asked about the sources of chiropractor’s knowledge with which they treated the patients I observed they acknowledged propositional knowledge but then swiftly, almost defensively went on to claim that professional craft knowledge had been instrumental.

Keith: [00:22:39] “... So, what role do you think does Glamorgan have in your current practice. Your Alma Mata in other words.”

Dot: [00:23:05] “It gave me the tools to become a chiropractor.”

A few seconds later, she later qualified this and described what the HEI gave her.

Dot: [00:23:24] “...just.. just the bones of becoming a safe practitioner.”

These participants acknowledged their debt to propositional knowledge in the form of their college education when it came to informing their decisions. It appeared to be a qualified acknowledgment, however.

5.3.2. Knowledge from Courses.

Another source of propositional knowledge explored was that of Continuing

Professional Development (CPD). Chiropractors are required to undertake CPD every year to remain registered. CPD takes a variety of forms, but the GCC requires that a set number of hours has to be 'learning with others' or learning in the company of other chiropractors or other professionals. It usually consists of a course that fits the particular learning cycle that the chiropractors are trying to complete. Courses are run by chiropractic associations, the RCC and also private individuals. These individuals are often chiropractors but can also be physiotherapists, medical doctors or osteopaths who advertise and charge for courses about a wide variety of relevant subjects.

I was keen to understand how significant this type of knowledge was to the participants. Sam and Jeff were in no doubt about the contribution they made.

Keith: [00:16:04] "...what proportion of your current learning .. learning that you've done through courses etc. informs what you do now?"

Sam: [00:16:41] "Well I suppose..everything I do now, I learnt 'postgraduate-ly'... yes, so I dont.. So does that answer the question?"

Keith: [00:29:33] "So. How much does... How much do you think courses have changed your practice? CPD in other words."

Jeff: [00:29:54] "Tremendously. Primarily because if I hadn't done kinesio-taping course I wouldn't have had any interest in fascia which meant that I wouldn't have gone on an ISTM course and thought this is shit, I can do better.. I can make better instruments."

When I asked how they judge if a course is likely to be good, I received halting replies most often around the venue or the speaker and less around the quality of the material covered.

Keith: [00:11:01] "...So when you went up to *****, yeah, what made you think that was going to be a good course, apart from the subject because it was a subject you are interested in?"

John: [00:11:19] "Who was presenting it, his position as an ESP [Extended Scope Practitioner]. OK. So that was important. Yeah. Yeah. And, and just sort of what I'd read about him, and it

didn't seem..I don't want to offend others.. but there was some substance to it. It was able to be backed up and just..justified. There was an application whereas lots of things are put out there is, you know, this works but there's little or no evidence behind it. So, I suppose it is that evidence that backed it up that really swayed me towards that.”

Keith: [00:03:01] “...What made you think [the course] was worth going to, because of the quality of the knowledge that you would get? Could you trust what they were saying? And why do you do that?”

Ronnie: [00:03:33] “Yes. Good question. When I do my CPD I tend to do it via the AECC because I regard the AECC and the Glamorgan colleges... two venues in this country where I can trust that what is being given to me at least passes certain scrutiny.”

Keith: [00:08:43] “You mentioned earlier on that you went to a course last weekend. So, do you think that was evidence based?”

Grace: [00:08:54] “That's the thing, because when you go your seminars, they always tell you that..that is most of them at least or whatever. They say that that's evidence based. But I haven't seen this evidence, so I haven't actually read much about yet. So, the evidence base meaning that's been done on hundred people and that worked without much broader scale. That doesn't really give you the criteria.. doesn't tell you much about what does he mean by evidence based.”

The participants valued their courses and based some of their decision making on material that they learned through attendance. They did however have a variable idea about how authoritative this information was. Grace questioned if it was evidence-based whilst Ronnie inferred that because the course was run by an institution, it had been scrutinised. Jeff was emphatic in his judgement of the ISTM course. This indicates that beside the propositional knowledge offered by college education these participants also absorbed this type of knowledge offered in courses but with a varied degree of acceptance. Whilst they seemed to care about the nature of the authenticity of CPD, they did not centre that judgement around the nature of the material but other aspects like the people or institutions delivering the material.

Andy, when referring to content that he received from a course said

Keith: [00:09:52] “And do you think there comes a time when you will look at that..that information?”

Andy: [00:10:09] (pause) “No, I’m not going to look at the raw studies.”

In summary, these chiropractors gained some practice knowledge from codified sources such as learning in an HEI or information imparted in a CPD course. There seems to be a qualified acceptance that this learning is essential. In the next section I shall describe the practice knowledge chiropractors use that is non-propositional beginning with the professional or craft non-propositional knowledge.

5.4. Non-Propositional - Professional Craft Knowledge

5.4.1. ‘Results’ as a source of practice knowledge

The chiropractors in this study regularly referenced the results of their actions as the most important reason for their professional acts. They defined their results often by alluding to the patient progression or to something immediate and measured - usually muscle testing. For these chiropractors there was an overriding sense that the results they perceived in their patients - be they surrogate endpoints like altered muscle testing or increased range of motion - were the driving force for their decision making. There were many examples in the interviews demonstrating this position.

Keith: [00:02:12] “So physical evidence that you see on a patient, the way they behave like muscle testing etc., for you that counts as evidence.”

Bill: [00:02:20] “That’s the best evidence because you are actually seeing an outcome measures. It must be an outcome measure.”

Keith: [00:08:10] "And so, therefore I guess.. because what I'm trying to get here is what counts for you as credible information that you base your practice on."

Dot: [00:08:22] "Results in clinic."

Keith: [00:08:25] "That's quite important."

Dot: [00:08:26] "Results in clinic."

Keith: [00:21:21] "What role does the results that you observe play in your decision making?"

Faye: [00:21:32] "They inform my clinical decision making to quite a big degree. "

Jeff: [00:04:11] "What counts for me is results, what gets the patient better. You know I'm.. I'm not bothered whether or not its.. most of my work is evidence based and very, very little of it isn't."

The word 'results' was used to cover all aspects of patient outcomes. There appeared to be no delineation between functional improvement or reduction in pain or better coping mechanisms. Results appeared to represent, very bluntly, the whole range of possible outcomes that might occur following a visit to a chiropractor. As another example, results obtained from a test-retest cycle were very evident.

"They [Chiropractors] seem to use muscle testing quite a lot. And it's this test-retest idea. That chiropractors are very keen, and with some justification, to test something, to do something and to retest something. Muscle testing seems to fit the bill. They're very happy with this type of work."

Field Notes Lisa 29/10/18

This was where a chiropractor would test a particular muscle for strength and if it was weak, perform a procedure and then re-test the same muscle to see if it had strengthened. The improvement in strength became a 'result'. It was apparently self-evident that the treatment 'worked' because of this change. The implication here is that these participants were influenced by their own interpretation of the progress of the patient. They seemed to value the information given to them by the test-retest

procedure as a guide to their actions. By using the word 'results' to describe this change, and then cementing this finding into their practice, they were using their professional experience as a basis for decision making.

When pressed, many of the participants went further and stated how results are generally more valuable to them in their decision making than literature.

Keith: [00:03:31] "So what do you think is important to you...what you have read, what you read. Or what you experience in here [the clinic]?"

Mary: [00:03:40] "Honestly, what I experience in here."

Keith: [00:17:51] "So you feel your personal experience would trump research in that way."

Abby: [00:17:58] "Maybe not for the general public but for me and then for other people they may find that then they have benefit from chiropractic."

Keith: [00:25:51] "Ok. Right. Do you think that the results that we see in our clinics trumps the literature? "

Andrea: [00:26:08] "Yes, I do."

These participants value 'results' as a mainstay to inform their practice. They do not necessarily decry other types of knowledge, but it appears that they do not consider propositional knowledge as the primary reason for decision making.

5.4.2. Non-Propositional - Personal Knowledge

This is the second type of non-propositional knowledge that Higgs and Titchen proposed (1998). They have defined it as "the unique frame of reference and knowledge of self which is central to the individual's sense of self. It is the result of the individual's personal experiences and reflections on these experiences." (Higgs and Titchen, 1998, p.528). More helpfully, Higgs and colleagues describe it later as

including “collective knowledge held by the community and culture in which the individual lives, and the unique knowledge gained from the individuals life experiences.”(Higgs, Anderson, et al., 2004, p.61).

The sample of chiropractors used in this study reflected the UK population of chiropractors with regards to the setting in which they worked. A little over a third of the sample of participants worked on their own. The remainder worked in practices where other chiropractors worked but not necessarily at the same time. Even in clinics where there is more than one practitioner, the opportunity for these chiropractors to engage and create communities of practice, are limited because of the lack of professional interaction.

We have previously mentioned the concept of ‘mindlines’ (see section 2.7). After a two-year ethnographic study of two well respected GP practices, Gabby and Le May concluded that the GPs did not necessarily gather the information that they used in their decision-making from propositional sources. This shows some similarity with this study’s participants. They suggest that GPs use ‘mindlines’ instead of constant reference to primary and secondary research, in the manner that is typically taught on courses about EBP. The authors refer to these ‘mindlines’ as “collectively reinforced, internalised tacit guidelines, which were informed by brief reading, but mainly by their interactions with each other and with opinion leaders, patients, and pharmaceutical representatives and by other sources” (Gabbay and le May, 2004, p.1015). The inference here is that the culture in which these GPs found themselves played a large part in informing their practice. With regards to the taxonomy that we are using here, these GPs used their non-propositional knowledge as an important source of their practice knowledge.

If this is the case with these chiropractors, then the culture in which they practice is going to inform their decision-making. Many chiropractors practice on their own with little interaction with colleagues beyond that which they engage in during CPD. The culture therefore that they work with may not be as richly diverse or informative as the sort of ‘water-cooler conversations’ that the GPs in the mindlines study are constantly engaged in. When talking about reasoning, a number of chiropractors made the point about the isolation of practice.

Bill: [00:10:54] "...we are all in isolation. Even.. even if you are in a group of other chiropractors, you're in an isolation within that isolated practice."

Faye: [00:07:50] "...self-learning I think is just harder and I think for a lot of chiropractors ... we talked about how we're all pretty isolated."

Mary thought that shadowing a colleague enabled her to share ideas with other practitioners. That implies that her community of practice was less accessible than accessing the next-door treatment room to ask an opinion or some help.

Mary: [00:18:51] "... if you're a one-man band like me I have to bounce my ideas off of other people all the time that are like minded and I find that very important and we learn from each other as well. And I'll often go up to ***** and shadow to a colleague of mine in his clinic."

Personal and professional knowledge come about partly through the practitioner's expression of the culture and context in which they practice. This knowledge is generated not only through the practice of the art and science of the healthcare practitioner but also from the environment and the context in which they work. In other words, the culture of practice has a direct line of influence to the decision-making, in this case, of chiropractors.

From these data we see that chiropractors use personal and professional craft knowledge in a significant way to inform their practice. Culture and context are important part of the use of and generation of personal and professional knowledge (Simpson and Cox, 2019). Therefore, culture and context are important in decision-making in chiropractic. It follows therefore that understanding the nature of this culture and describing the context in which chiropractors work may have a direct influence on the way that chiropractors use practice knowledge to inform their decisions. If the output from EBP is a health-related decision, then the culture in which these chiropractors work is very important when trying to understand their relationship with the EBP. This is discussed later in this chapter.

5.5. Summary of Findings

In these participants there was an expression of preference for knowledge gained from experience or results as a guide for their decisions. They privilege non-propositional knowledge even though it is difficult to express and when pressed these participants often find it challenging to identify the source of this type of practice knowledge.

5.6. Implications and interpretations

In the following section, four explanations for this finding are explored; is EBP too difficult to apply to Chiropractic practice, is EBP as a concept unhelpful, how does the community of chiropractors' impact upon their use of propositional knowledge and finally what are the implications of blending various types of knowledge to inform healthcare decision making.

5.6.1. EBP as too difficult

There is very little work describing how chiropractors use the evidence base in their practice. One paper attempts to estimate how much of chiropractic practice is evidence-based by assessing patient files, comparing the presenting condition with the primary intervention and then viewing the literature for appropriate support (Wenban, 2003). The study followed only one chiropractor for 180 consecutive patient visits and claimed that 68.3% of the care given was Category 1 (Interventions whose value has been established in 1 or more good quality clinical trial.) Quality was assessed by a non-validated scale. It would take larger studies using randomly selected samples of chiropractors and recognised measures of quality to establish the truth of this claim however it demonstrates that the propositional aspect of chiropractic practice knowledge has at least been tested if incompletely.

In the literature review it was suggested that some of the surveys used to assess

attitudes, behaviours and knowledge of chiropractors about EBP made some assumptions about their understanding of the term. By their inability to define the concept of EBP, these chiropractors would be unable to accurately articulate how they use EBP in their practice. However, they were able to make meaningful comments when discussing the knowledge they used to make decisions. The output of EBP both in this context and other health care environments, is health care decisions (Thomas and Young, 2019). Whilst these chiropractors did not have a detailed understanding of the concept, they have some insight into their own decision-making processes. The data suggests that they rely on non-propositional knowledge in an imbalanced way, but this could be true of other health care practitioners who could easily define EBP and yet still privilege professional knowledge to the exclusion of other types of knowledge. Whilst the concept of EBP might be too difficult for these chiropractors to accurately engage with, they have some understanding of the processes needed to make health care decisions and therefore engage with a proxy of the concept of EBP. In essence therefore, I am concluding that the argument that propositional knowledge is too difficult does not satisfactorily explain their preference for other types of practice knowledge.

5.6.2. EBP as unhelpful

The finding that propositional knowledge is overlooked in these chiropractors could indicate that research evidence may be difficult to apply to the reality of practice. This is one of the principle criticisms of EBP and this could be why they do not appear to engage with the concept of EBP in a personal way (Greenhalgh et al., 2014). This will force chiropractors to rely on their clinical expertise for decision making. For this to be the case the existing literature would have to be inadequate or inapplicable when applied to their decision making. In MSK care, particularly of low back pain, there are a significant number of studies which have synthesised findings that inform practice (Bronfort et al., 2010; Clar et al., 2014). NICE guidelines have been published relatively recently directing care of low back pain (NICE, 2020). For low back pain at least, evidence exists that is broadly applicable to each individual patient (low back pain accounts for 50 % of visits to a chiropractor – see section 2.4.6). Probabilistic generalisation means that for a larger proportion of chiropractic

patients the evidence will apply; exceptions exist but are 'probabilistically' less frequent. The literature - propositional knowledge in this case - is applicable to a significant portion of their daily practice. The suggestion that there is unclear or insufficient propositional evidence base for their actions is an unconvincing reason to explain these chiropractors' reliance on results for their decision making.

The observations helped establish that in at least one area these chiropractors seemed to be practicing in ways that were divergent from what might commonly be referred to as evidence-based musculoskeletal practice. For example, I recorded very little prescription of exercises as an observation in my field notes. I mentioned this early in my field diary.

"I have not seen one person set strengthening exercises. Some stretches, some minor ergonomic advice. No one has set exercises or encouraged to get moving. Or [the] consequence of movement."

Grace's Field Notes 19/10/18. (See appendix 8.3 for a scan of the actual field notes)

To many in the MSK sector this might be at odds with established, evidence-based treatment for any MSK condition but particularly for low back pain. If the propositional sources of knowledge, in this case guidelines and synthesised research, strongly suggest a particular therapeutic theme, the care I observed failed to incorporate a key part of evidence-based care, namely an emphasis upon self-care, movement and exercise.

The implication of these findings is that some adherence to EBP care outlined in these propositional sources of knowledge would have been observed if chiropractors were using propositional knowledge upon which to base their care. Ergo they were not using their propositional knowledge. They must therefore be using another source of knowledge to inform their professional action in an imbalanced way.

5.6.3. Community Dependency

Crow suggests that “defining ‘community’ has been a long-standing challenge. It can be readily agreed that a community involves a group of people with something in common,”(Crow, 2017, p.2) For this study, we will define community as a group sharing a sense of beliefs, values and norms.

Chiropractors share a community where they have a shared view of health care and how that may be maintained. They have a shared idea about how to alleviate MSK pain, how to practice, how to learn and how to behave. This may have an influence on how chiropractors practice. If they share a normative idea about how health is brought about then this might in turn effect how they engage with paradigms of health care. Similarly, if they practice using one type of knowledge base as their basis for decision making, or at least favour one type of knowledge, this might impinge on the decisions that they take. In terms of these chiropractors, I have termed this Community Dependency meaning the culture in which these chiropractors practice influences their decision making.

One way in which this community dependency demonstrates itself is in the physical environment in which they work. Over a third of these participants practise in isolation. The remainder practice in rooms on their own often relinquishing it to a colleague after they are finished for that session. In other words, there is little space for professional interaction in their day-to-day practice. If, as this data suggests, these chiropractors are using knowledge that they have generated through their clinical practice and the ‘collective knowledge held by the community and culture’ as Higgs describes it, without a balancing view from propositional knowledge, then they risk confirming their own experiences repeatedly (Higgs, Anderson, et al., 2004, p.61). This can be termed confirmation bias.

The other way in which a community dependency may reveal itself is in the propensity to critically appraise or reflect upon information new or old. The data demonstrated that these chiropractors admitted to not investigating the sources of knowledge that they acquire through CPD. Faith, Faye and Dot all admit to not

investigating the basis of some of their learning.

Keith: [00:24:22] "Activator, I'm talking about published work. Yeah. You didn't go and have a look at that. You didn't go and say right well I'm gonna go and read what FUHR's said."

Faith: [00:24:30] "No."

Keith: [00:03:43] "So if we talk about Leonard Faye and his Motion Palpation Institute. Do you.. first of all..what do you understand about the evidence for motion palpation?"

Faye: [00:03:59] "I can't quote any of the literature."

Keith: [00:05:13] "And that's very much an SOT idea."

Dot: [00:05:14] "Yes. Yes. Wait."

Keith: [00:05:18] "Where did that come from?"

Dot: [00:05:21] "The SOT?"

Keith: [00:05:22]. "Yeah. What's the basis of information?"

Dot: [00:05:25] "I couldn't tell you. I never ask that question."

This demonstrates how these chiropractors are not used to critically appraising the validity or truthfulness of the information that they acquire. This will have a profound influence on their practice epistemology if the community in which they work similarly do not develop a habit of critically appraising the knowledge that informs their practice.

Earlier we identified that some chiropractors view evidence produced in other professions as inapplicable to their practice. It suggests that they feel somehow separate. This may be an expression of their sense of identity or part of the community dependency. This 'Otherness', as we referred to it earlier, might not only refer to EBP but also to the wider healthcare community. It will throw these chiropractors back on themselves, highlighting their dependency on each other and the community in which they practice. This community will have a normative by

which it defines itself. If it does not hold its common practices to account, and it does not value any other healthcare community view of their practice knowledge, it risks becoming siloed. It risks applying untested and unexamined theory to practice.

5.6.4. Professional knowledge and the Blend of EBP

We have defined EBP regularly throughout this thesis as a blend of best evidence, clinical expertise and patient values in the consideration of decisions made in health care. It is regularly assumed that the process of the blend is a taken for granted exercise. Certainly, in chiropractic literature there is little to advise about how to go about the process of blending this information. A notable exception is a paper by Leboeuf-Yde and colleagues (Leboeuf-Yde et al., 2013). It suggests a traffic light system for consideration of healthcare decisions where clear evidence is lacking. An assumption is made here about what 'evidence' is and in this case the assumption is that it is population derived data underscoring a positivist conception of causation. In the absence of strong evidence, they suggest asking the following questions.

Question 1: are there objectively tested facts to support the concept?

Question 2: are the concepts that form the basis for this clinical act or decision based on scientifically acceptable concepts?

Question 3; is the concept based on long-term and widely accepted experience? (Leboeuf-Yde et al., 2013, p.27)

The last question in this list would speak to the use of non-propositional, personal and professional knowledge that the chiropractor uses in the formation of decision making. Leboeuf-Yde uses the terms 'long-term' and 'widely accepted' when referring to the experience base.

These chiropractors use this type of knowledge more frequently to justify their decisions. There are implications to this approach. Firstly, it suggests that chiropractors do not find the propositional knowledge available to them as sufficiently useful to inform their practice. This could be because they either have limited access to this sort of information, they find the information difficult to translate to their

circumstance, or they do not trust the sources. We have seen that these participants sometimes distrust the information that is published in research journals, often because it is not produced by chiropractors. This might throw them back on their own experience as the best source of information. But if EBP is a blend of non-propositional knowledge in the form of clinical expertise and propositional knowledge in the form of best (published) evidence, then the blend may suffer from an imbalance of emphasis.

LeBeouf's contribution here is the blend of the propositional statements about the knowledge that chiropractic could use in their decision making. She makes it clear that the decisions should be made not only with reference to evidence but also crucially to biological plausibility. Both of these suggested sources of knowledge require System 2 thinking, the purposeful analytical slow thinking described by Kahneman (Kahneman, 2011). It is in contrast to the intuitive style of thinking typified by System 1 which uses heuristics or short cuts to come to decisions (Croskerry, 2009). If chiropractors are using these heuristics, a feature of which is pattern recognition, and these patterns they form are.

Other professions also appear to pay less attention to the propositional knowledge available to them and yet provide care. In their ethnographic study of GPs, Gabbay and Le May suggest that their participants rarely if ever searched for literature using the standard teachings of EBP by using the formal PICO method of identifying suitable search terms and subsequent uncovering of recognised evidence (Gabbay and le May, 2004). They remark

“Instead, [GPs] relied on what we have called “mindlines,” collectively reinforced, internalised tacit guidelines, which were informed by brief reading, but mainly by their interactions with each other and with opinion leaders, patients, and pharmaceutical representatives and by other sources of largely tacit knowledge that built on their early training and their own and their colleagues’ experience.” (Gabbay and le May, 2004, p.1015)

It might be possible that the participants in this study were doing a similar thing,

and this could explain why they were often explicit in their rejection of research knowledge as a common source of their practice knowledge. The difference in these two samples however is that the GPs worked in environments where collaboration and mutual support from medical, nursing and professional staff in their large practice was common. Given that we have established that most of these chiropractors have limited daily contact with their colleagues it is unlikely that they have the same sort of support mechanisms which might facilitate such interactions.

5.7. Why imbalanced?

5.7.1. Non-propositional knowledge in other health care communities.

Other studies that have examined sources of practice knowledge in other healthcare communities have claimed similarly that non-propositional knowledge appears to be favoured. Gabbay showed how the community of practice in primary care health care workers he studied “did not handle new evidence as a basis for their policy recommendations” (Gabbay and le May, 2011, p.137; Gabbay et al., 2003). Estabrooks in her ethnographic case study of nurses examined the factors that influence nurses’ research utilisation behaviours. She found “that social interactions and experience are the two most important sources of practice knowledge for nurses.” (Estabrooks et al., 2005, p.468). Neither author felt this to be an imbalance in their populations so this might beg the question why this reliance on experiential knowledge is termed an imbalance in these chiropractors.

5.7.2. Dealing with the blend of EBP and causal claims

We have seen how in chiropractic the blend of evidence has been proposed (Leboeuf-Yde et al., 2013). Assumptions were made regarding what counts as evidence. What is rarely in dispute is that propositional knowledge is not the only source of relevant evidence. In chiropractic, relevant and up to date propositional knowledge is mostly in the form of research at the top of the hierarchy, namely systematic reviews of RCTs (Evans, 2003). This generates knowledge that has probabilistic or statistical generalisation (Smith, 2018). The knowledge formed by this

sort of scholarship demonstrates statistical and clinical significance and traditionally confers upon it the ability to claim causal mechanisms at work (Howick, 2011). There are difficulties with this position, however. As Polit and Beck point out the ‘statistical generalizability model is almost never fully realised, even though the research community usually acts as though it is’ (Polit and Beck, 2010, p.1457). It is not a claim that in all instances of the intervention under study the result will be the same outcome.

This has a bearing on our discussion about why these chiropractors prefer non-propositional knowledge as a reason for their decision making. Research or non-propositional knowledge is seen by these participants as suspicious or irrelevant (see section 4.1.8). This leads to a discounting of research as a source of practice knowledge and hence a legitimization of an alternative source of knowledge. It is here where the imbalance lies. These chiropractors could regularly defend their position about palpation, manipulation and other activities that have little supporting probabilistic generalisable evidence by claiming that ‘in their experience’ the activity helps. By discounting propositional knowledge because of the context in which it is delivered – it is negative, a legal justification, a threat or stifles innovation (see section 4.1.2 ff), and not the basis upon which the knowledge is generated, it betrays an incomplete engagement with scholarship. Relying more on their personal experience of care rather than taking into consideration other sources of practice knowledge leads to an imbalance. The claim that their decisions about patient care were more than often guided by ‘results’, appeared in this data frequently and I suggest in an imbalanced way.

5.8. A reflective model of EBP

There is little to guide the profession about how to blend the three domains of EBP. The assumption that they are easily combined is criticised in other branches of health care (Tonelli and Shapiro, 2020). Where there is a presumption that EBP is equivalent to research, and research is predominantly understood to be quantitatively based, the tool that would be best placed to help chiropractors (and other healthcare practitioners) would be a skill in critical appraisal. This however is

not enough. Chiropractors should be aware of the propensity for confirmation bias in their clinical life and, with reflective practice, constantly examine their own decision making to ensure that the phrase 'in my experience' is not overused. There is also a need to evaluate the context and paradigmatic assumptions that practitioners hold to ensure that these are not unduly influencing their ideas about what the patient needs or wants. Being reflexive and examining one's own values enables practitioners to understand and work with the values of others (Bolton and Delderfield, 2018). Reflection therefore either in the form of critical appraisal or the uncovering of one's own bias or the exploration of the patient's values, is key to relating meaningfully with each of the three domains of EBP.

A representation of the relationship between the EBP, professional knowledge and reflective activity is outlined in **Figure 9**. It is a proposed model of understanding how in practice chiropractors could balance and blend these different ideas of practice knowledge and enable them to provide effective, efficient and evidence-based care. If these chiropractors had a better understanding for the relationship between the proposed model of practice knowledge used in this study, it might help to alert them to imbalances where one type of practice knowledge is being used at the expense of the others in an uncritical way.

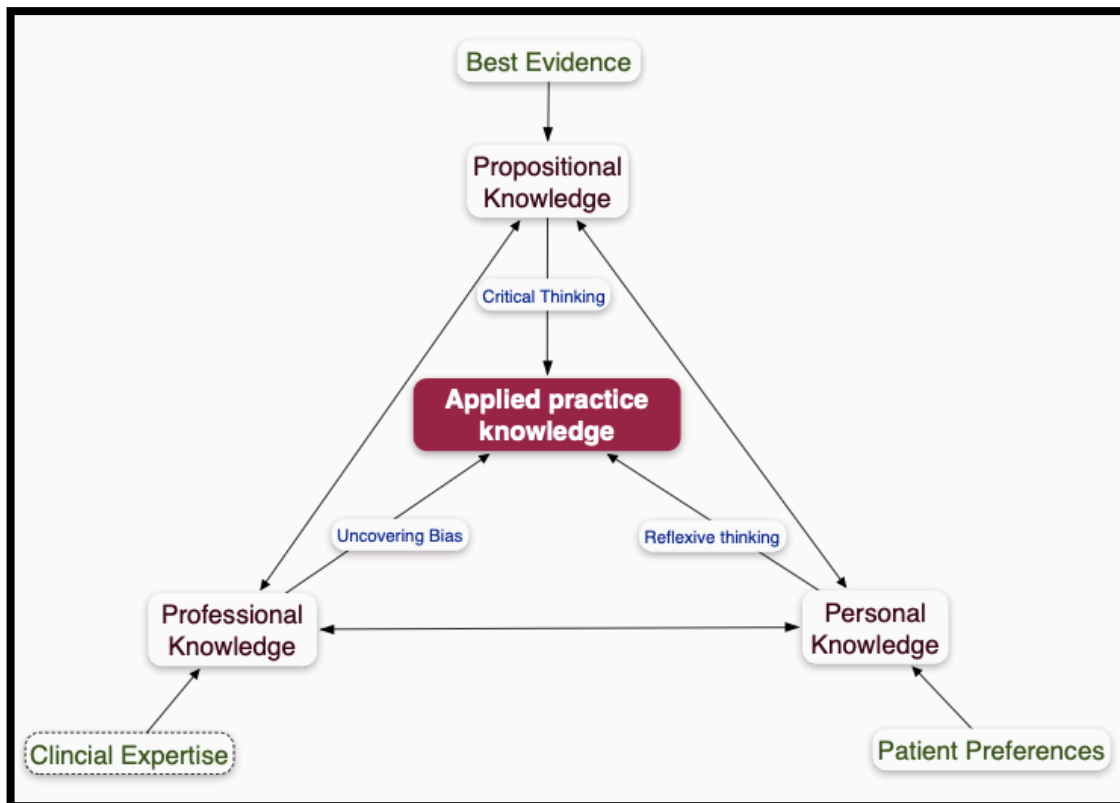


Figure 9: Proposed model of professional knowledge, EBP and reflective practice.

This model serves to highlight two important findings linking the themes I have described above. I have described that in these chiropractors there is a lack of true understanding of the concept of evidence-based practice. When asked they default to an equivalence between research evidence and EBP. When applied to the taxonomy of knowledge, this should translate to an overreliance upon propositional knowledge. It is also clear however that these chiropractors do not rely on that type of knowledge as the most important informer of their practice decisions. This might help to explain why they have an incongruent idea about the application of EBP to their work; they think the profession should be evidence based but regard the concept as irrelevant to their personal practice.

In the model in **Figure 9**, the three recognised domains of the concept of EBP are equally sized and articulated. They are not unbalanced in their emphasis or at least not as a rule. They are also linked to the taxonomy of knowledge developed by Higgs and Titchen (1998). Research evidence and Propositional knowledge associate well as they are both defined in terms of scholarship. Non-propositional

professional knowledge and clinical expertise align. Non-propositional professional knowledge is defined as knowledge that comes from professional experience and clinical expertise. Tonelli and Shapiro (2020) describes experiential knowledge as the clinical expertise referred to by Sackett in his original definition of EBP (Sackett et al., 1996). Finally, non-propositional personal knowledge is related to the values, contexts and personal experiences of the healthcare giver. Values can be said to see the world 'as it ought to be' (Kelly et al., 2015, p.70). This 'oughtness' differs depending on the perspective of the individual. In this context, a patient may dislike exercise so much that they prefer to have a treatment modality that has been shown to be less helpful. The patient might consider their condition 'ought' to be amenable to passive measures. A knowledge of these values is important for they are relative to one's own. If preferences and values were uniform between patient and therapist, there would be no need to establish how they differ or if there were different value-based preferences. Non-propositional personal knowledge therefore is interwoven with Sackett's idea of patient preferences.

The model further associates the three domains of EBP, and the taxonomy of knowledge used here with three forms of reflection. Reflection and reflexivity, I propose, underpins the ability to make balanced decision making that is the output of EBP. In this model I have termed it Applied Practice Knowledge. For propositional knowledge, critical appraisal is needed for the identification of confounders and bias that might alter scholar's conclusions. Confirmation bias is an important source of professional misjudgement and a thorough examination of one's own values is necessary to understand where they differ the recipient of contextualised care. Without the application of reflection to all decisions of health care, there is a risk that errors are made.

Kerry and colleagues ask that MSK practitioners consider this relationship. They sum their position neatly.

"The crux of the matter, as we see it, is that the advent of what we now know as evidence-based healthcare presented a challenge to clinical practice requiring clinicians to reconsider precisely what value they should attach to non- prioritised

evidential sources.” (Kerry et al., 2020, p.217)

In summary, this chapter presented an important theme of the work. It described the findings that supported an interpretation that these chiropractors appeared to favour non-propositional practice knowledge over other type of knowledge. An explanation of this might be the effect of the nature of the community in which they find themselves and how it does not provide the sort of checks and balances that other communities might. This preference for non-propositional knowledge was described as an imbalance. The relationship between EBP and the practice decisions that these chiropractors made was suggested. In the following concluding chapter, I shall highlight how this, and the previous findings have contributed to an understanding of chiropractors and their relationship with EBP. I shall also discuss the limitations of the study and make some recommendations.

6. Chapter 6: Conclusions

In this Chapter, I will give a summary of the genesis, process and findings of this thesis. I will outline how the aims and objectives of the study were met and define the contributions to knowledge that it makes. There will be a discussion of the limitations of the work, unanswered questions and finally an outline of the recommendations the study suggests.

The study began by situating it in the personal story of the author as a practicing chiropractor. Some terms were defined and an illustration of both the chiropractic profession and EBP was made. It concluded that chiropractors, like other health professionals, have a regulatory responsibility to adhere to the tenets of EBP. The practice of EBP was critically reviewed and the contested issues discussed.

Researchers who use survey instruments to explore the relationship between chiropractors and EBP often make assumptions about the profession's understanding of the term EBP. Very little research into how chiropractors engage with EBP was found. That which does exist often focuses on a narrow definition of EBP which privileges quantitative research to the exclusion of other types of practice knowledge available.

This study was defined as exploratory, asking questions such as 'what' and 'how' rather than seeking to understand 'why' a particular phenomenon exists. As an exploratory study, a qualitative approach was used, more particularly a non-participatory observation followed by semi-structured interviews, as a method of gathering the data. An inductive research strategy was used to develop theoretical insights that might be tested more formally in the future. A reflexive TA was performed and generated four main themes "The otherness of EBP", "An Incongruence of thought", "There's a dance to be had" and finally "An Imbalance in practice knowledge."

The reflexive nature of this work is central to its process. My position as a

chiropractor was both helpful and unhelpful in trying to uncover the complexities of this phenomenon. It was helpful in that I am familiar with the world of chiropractic and understand many of its 'cultural consistencies' as Williams refers to it (Williams, 2002). This enabled me to see beyond many of the behaviours of my participants without having to check the significance of each one because they were new and untold to me. It was unhelpful in that I was very aware of my own position regarding EBP which did flavour my interpretations. It also could blind me to aspects of this phenomenon that might be very obvious to those outside the profession. I framed this as being camouflaged in the normality of my own practice experience. A reflexive journal was kept uncovering some of the assumptions I was making. I used Brookfield's three assumption categories to guide my reflections; paradigmatic - how we frame the world or how we think it works, prescriptive - how we expect the world to behave and causal - why things happen the way they do (Brookfield, 2012). Brookfield's idea of paradigmatic assumptions challenged the way I was viewing these participants and helped in the construction of the themes.

6.1. How the aims and objectives were met.

The aim of this study is to explore the interface between evidence-based practice and chiropractors in practice in the UK. Three objectives were identified to meet this aim.

- Using non-participant observation and interviews, establish the participants understanding of the term evidence-based practice.
- Using their definition of the term, explore and describe the nature of their relationship with EBP and how they relate this to practice.
- Having articulated the relationship these participants have with EBP, explore the implications for the profession, future research and education.

To meet these objectives, a criterion sample of twenty participants were observed for a clinic session with multiple patients and then interviewed using a semi-structured format. Issues pertinent to the research question that arose during the

observation were also explored in the interview. This triangulated approach led to the formulation of the first theme which described these chiropractors view of EBP.

Theme 1 - The Otherness of EBP: These participants found it difficult to define EBP. They felt it was optional and created by others and was a barrier to innovation in practice. To them, EBP was a process not owned by chiropractors, undertaken only for professional recognition and legal protection. However, there is an aspect of this development that goes beyond the desire for professional approval whilst dismissing its practice relevance. These chiropractors claimed that their practice is self-justifying to such an extent that they do not require the strictures of a health care paradigm like EBP that does not speak directly to them.

Some of the possible complexities of this sense of disconnectedness have been explored. It might begin with the understanding that these chiropractors, save one, gave an incomplete definition of EBP. As other studies have found, they conflate EBP with research (Hall, 2011). Whatever their definition of the concept is, these chiropractors feel that EBP might stifle innovation, can be negative and, most tellingly, simply does not apply to them. It is irrelevant. They feel that EBP is only about research and that the research about the work that they do does not reflect their practice. It is perhaps understandable that as a consequence they have an unresolved relationship with EBP. This met the first objective.

Once I had established the participant's understanding of EBP, the second objective was met by exploring their relationship with the term. This relationship was described in Themes 2, 3 and 4. **Theme 2 - 'There's a dance to be had': performance and EBP** - the findings showed that the more of a routine with treatment and examination these participants demonstrated, the less the chiropractor related to the idea of EBP. For some of these participants there was a very definite 'protocol' for each patient and each visit. These protocols were very similar across all patients regardless of age, gender, or condition. I called them performances. The rigidity of the performance related to later discussions of the source of practice knowledge and was related to the concepts of Donald Schon's 'Technical Rationality' versus his 'Professional Artistry' - Oliver Thomson referred to them as 'Conceptions of Practice' (Schon, 1983; Thomson et al., 2014a). Regarding the latter, Thomson and colleagues identified this in their idea of the Theory-Practice relationship and its

influence on osteopaths and their position on the continuum between Technical Rationality and Professional Artistry. They include a quotation from one of their participants that identifies this idea

My [clinical] examination isn't the same every time, it's an organic thing...and it depends on the patient. (Thomson et al., 2014a, p.40)

In other words, this participant in Thomson's study recognised that the patient demanded an individual, contextualised response to their predicament and not a regimented, inflexible, pre-learned sequence of actions which might well reflect sound testing procedures, but which betray an unresponsive approach to the individual. Here, the observation that performance was rigid in participants who were less aligned to a fuller understanding of EBP led to a connection between routine or ritual and an unresolved relationship with EBP. This has not been described in Chiropractors before.

The third theme - **Theme 3 - An Incongruence of thought** - showed how these chiropractors spoke of their essential disconnection and dissonant thinking occurring about EBP and the practice of chiropractic. The findings demonstrated that these participants felt that EBP did not apply to them whilst in contrast they supported the profession's use of EBP. This incongruity suggests a complex and unresolved relationship with EBP. This might be explained if we refer to the difficulty that these chiropractors had with the definition of EBP described in Theme 1. They conflate the concept of EBP with research alone, and do not respect research because it is often performed by non-chiropractors, and it does not appear relevant to them. Consequently, they have difficulty seeing EBP as a concept that is necessary to engage with.

The first three themes discussed in Chapter 4 meet the first two objectives. They dissect the meanings that these chiropractors ascribe to EBP and then explore what this says about their relationship to it. The fourth theme meets the third and final objective. It tackles the sources of the chiropractors practice knowledge and relates it to EBP. Thus, it identifies a likely direction for future consideration when addressing students and practicing chiropractors' interactions of EBP. **Theme 4 - An**

imbalance of practice knowledge: These chiropractors privileged non-propositional knowledge (knowledge from practice or personal experience) over propositional knowledge. 'Results' drove their decision making. Whereas their definition of EBP often centred around research, they explicitly used professional experience to inform their care in preference to codified knowledge. Whilst the use of professional experience is not unusual, the finding here is that this preference may be imbalanced as it is used to frequently explain practice behaviour with little or no justification or balance with other types of practice knowledge.

If a new approach to practice knowledge is going to be used it would be beneficial if chiropractors adopted a more reflective approach to their work. I propose that reflection is key to properly situating propositional and non-propositional knowledge in chiropractic practice and would enable these chiropractors to make more balanced judgements about their work. I proposed a model whereby EBP is aligned with the taxonomy of practice knowledge within which I analysed these data (see section 5.8). The distinctive tool with which the three domains of EBP and practice knowledge are addressed lies in the ability and propensity of practicing chiropractors to reflect.

6.2. Contribution to knowledge

The key finding of this study are that these chiropractors have an unresolved, remote and incongruent relationship with EBP. They demonstrate that with an unbalanced reliance on non-propositional practice knowledge, and a technically rational adherence to narrow protocols of work.

I develop a model (**Figure 9**) that links the key features of the domains under investigation. In this model, EBP and practice knowledge are seen as reliant on the reflective skills of those health care practitioners engaged in the task of trying to form health care decisions.

6.3. Unanswered questions

I explored x-ray use as an activity that had a clear evidence base and whose usage had changed with time to try to establish how chiropractors had used practice knowledge to alter their behaviour. I was not able to uncover a satisfactory explanation.

Chiropractors have traditionally been trained to take and read musculoskeletal radiographs. It has been clear from surveys that chiropractors have drastically reduced their use of x-rays in clinical practice (see section 4.2.3). The reasons behind this are unclear. X-rays are generally profitable; chiropractors have often seen their identity in part as different from others because they can x-ray, and patients are often keen to get x-rays thinking that they provide answers and have no side effects. If these reasons for chiropractors prescribing and taking x-rays are true, then is there an easy explanation as to why x-rays are much less popular than 30 years ago? There are more administrative hurdles to overcome to run an x-ray unit although I would not argue that these were very significant. With the advent of digital x-ray units, the upkeep is easier and does not rely on replenishing development fluids which have short shelf lives. The cost of setting a unit up as new practitioner might be prohibitive, however this does not explain practices which have dismantled their facility.

The evidence-based approach to x-ray use in the care of MSK patients would suggest it should be used sparingly. This combination of a trackable activity in chiropractic that has changed with time whilst there has been a change in evidence suggested an attractive subject for investigation to identify why these participants did not use x-rays as their more senior colleagues once did. Despite asking participants, I was left with no clear answer. This might be useful to pursue because it identifies an activity that has reduced in use with the reduction in the evidence behind it. In other words, are chiropractors following evidence here?

In the theme - 'there's a dance to be had', I proposed that there might be a connection between a ritualistic performance of examination and treatment that I observed and a limited understanding of the concept EBP. I explained this by

suggesting that these chiropractors might be ‘technically rational’ in that they understand the underpinning principals of MSK care but lack the ‘professional artistry’ when a more individualistic view of their health care decisions is required. If this is the case, then there might be implications for how the skills of assessment and treatment choice are taught.

6.4.Limitations

The findings of this study are not generalisable in the way that quantitative findings from a random sample are generalisable to the population sampled from, but still tell us something about what is likely to be found in similar settings. They might be deemed transferable, i.e., resonant with a reader’s experiences of a relationship with EBP. This transferability is dependent upon the detailed description of the process of data collection and analysis so that the reader may make a judgement about how similar their own situation is to the one described here.

The sample that I chose to examine was limited geographically to the Southwest of England. This was principally because of the limited resources available to perform the study. The sample broadly reflects the diversity of the chiropractic profession from the data available at the time with the exception of identifying a further graduate of an international chiropractic college. Further information might be gained by studying chiropractors from other parts of the United Kingdom.

Triangulation is the concept that researchers might take different perspectives on the issue under study (Flick, 2014) (see section 3.6.15). Whilst methodological triangulation was achieved by using observations and interviews to uncover as much of the diversity of the phenomenon as possible, another individual involved in the study would have provided ‘investigator triangulation’. Frequent conversations with the two supervisors provided some balance and alternative interpretations to the data helping to limit the bias of a single investigator.

Earlier, social desirability and its relevance to self-reported surveys was

discussed (see section 4.2.2). Social desirability takes place when questions involving a departure from societal norms attracts answers that do not accurately reflect the participants views. It is possible that this type of bias occurred during the interviews. Previously I have also discussed the effect that I might have on the participants as an older chiropractor with a profile (see section 3.4.1) and how the act of observing might help mitigate some of the impact that this has on their answers in the interview. Nevertheless, it is entirely possible that during their interviews, the participants formulated their response to my questions wishing to present a favourable impression. This will have impacted upon the conclusions. The observation that many of the participants had different views about EBP depending upon which domain to which they were referring, either professional or personal, would indicate that if they did demonstrate socially desirable views in one aspect, it was counteracted by another.

Another limitation might be in the sampling of the participants. As they agreed to participate, the study could be open to a volunteer bias. It may be that potential participants who have very divergent views regarding EBP self-selected themselves out of the study because they were not prepared to engage with it.

6.5.Recommendations

Overall, the principal finding of this thesis relates to the disconnection that chiropractors have with the concept of EBP. I have explored why this might be suggesting possible reasons and proposed theoretical frameworks in which to situate this disconnectedness. When considering recommendations therefore it is important to be clear about which problem is being addressed.

6.5.1. The nature of EBP

I have described that these chiropractors do not have a clear idea of the nature of EBP. They often conflate it with research and have a very underdeveloped idea about how patient preferences should be taken into account as part of EBP. In order

to address this issue, it would be useful to discover how common these findings are in the wider population of chiropractors. To see if a full understanding of EBP is related to the amount of time it is since the chiropractor graduated. Using a survey that tested the understanding of the concept rather than attitudes and beliefs about EBP would be key. Such instruments exist but would need to be validated for the use with UK chiropractors (Hendricson et al., 2011; Ilic et al., 2014; Spurlock and Wonder, 2015). If the results of such a survey mirrored the findings here, then more work in the preparation of students at undergraduate level might be required. At postgraduate level, CPD courses on how to implement research findings and how to blend practice knowledge with patient preferences might prove helpful.

6.5.2. Ritual and patient centredness

In chapter 4 I described the existence of a ritual observed and the possibility that it was connected to a technically rational view of practice that prevented the therapist from exploring the needs of the patient from an individual point of view (see section 4.3.1). This phenomenon deserves better exploration. A similar method to this study could be used to concentrate on identifying the essential characteristics of rituals in chiropractors and also in other groups of MSK therapists. Interviews might follow observations which concentrate on identifying the stance of the therapist regarding patient centred care.

The nature of rituals to the quality of care for patients might be explored because it is unclear if they are helpful or not. It is unclear if using rituals as a part of the process of practice knowledge might assist or detract from effective decision making in healthcare. In this study it was postulated that it might be linked with an incomplete idea of EBP. If these rituals were deleterious or if they were helpful to the process of decision making, then shaping chiropractic education to adapt accordingly might improve the profession's relationship with evidence. Indeed, this may not be restricted to the chiropractic profession. The other MSK professions – physiotherapy and osteopathy – might benefit from examining the role of these rituals in their patient management processes.

6.5.3. Reflection as an important tool.

The previous chapters referred to how these chiropractors not only found EBP difficult to define but also appeared to view it as elusive as a concept and irrelevant. One of the reasons why EBP might be irrelevant to these chiropractors is because they lack the tools needed to critically appraise research literature, interrogate their own self-generated practice knowledge and establish patient preferences. One of the codes generated from the data reflected the idea that if research was performed by someone other than a chiropractor it might not quite be trusted (see section 4.1). Research is profession neutral. It is challengeable based on ideas of truth value, consistency, applicability and neutrality (Guba, 1981). To identify any of the ideas behind these concepts one must have the skill of critical appraisal. Part of the skill needed to critically appraise is the issue of challenging assumptions, the hidden assumptions of the researchers, researched and indeed the reader. It goes beyond the “nuts and bolts of process” as Brookfield calls it (Brookfield, 2009, p.293). He goes on to suggest that this sort of uncritical view of one’s own practice leaves “unquestioned the criteria, power dynamics and wider structures that frame a field of practice” (Ibid p.294).

If these areas of practice knowledge are felt to be out of reach or are felt to be unquestionable it suggests little mastery of reflective practice. Reflective practice has been an aim of health professionals’ education for a number of decades. Both Schon (1983) and Benner(1984) referred to the artistry of practice as the product of reflective practice.

The participants in this study often demonstrated that they were unable to clearly articulate the sources of their knowledge or practice-based decisions. One reason might be that they fail to reflect deeply enough or regularly enough on their practice to develop a clinical decision making which is evenly informed by all aspects of the propositional and non-propositional knowledge suggested by Higgs and Titchen (1998)

In the Chiropractic profession the code of practice does not contain any

reference to reflective practice. The word reflective is not in the document. The only suggestion in the GCC standards is the single reference in the Education Standards which ask as a general statement that HEI's "ensure that chiropractic students on chiropractic degree programmes receive a high-quality education to facilitate their development towards becoming reflective, self-critical and effective primary healthcare practitioners." (General Chiropractic Council, 2017b, p.2)

Other health care professions are much more demanding. The Health and Care Professions Council (HCPC) code of proficiency for physiotherapists specifically mandates a reflective view of practice. In section 11, it requires that physiotherapists "be able to reflect on and review practice" and that they need to "understand the value of reflection on practice and the need to record the outcome of such reflection" (Health and Care Professions Council, 2018, sec.11). Osteopaths also have a standard that demands reflection. Section B4 of the Osteopathic Practice Standards ask that registrants "...must be able to analyse and reflect upon information related to your practice in order to enhance patient care." (General Osteopathic Council, n.d., sec.B4). The Nursing and Midwifery Council (NMC) standards ask that nurses "take responsibility for continuous self-reflection, seeking and responding to support and feedback to develop their professional knowledge and skills" (Nursing and Midwifery Council, 2021, sec.1.17).

Chiropractic at the regulatory level currently appears not to share other regulatory bodies' views that reflective practice is an important part of a health care professional's skills behaviours and knowledge. This is at least the present position in the script of the various standards to which chiropractors and the institutions that train them are held accountable. The GCC's Education Standards are being rewritten as this thesis is being finalised (General Chiropractic Council, 2022). I serve on the steering group tasked with producing this document. In response to my findings, I proposed a sub-section into the clinical reasoning standard that specifically refers to reflection. It asks that HEI's teach students how to "understand the importance of habitually reflecting on good and poor practice in order to develop responsible and ethical decision-making and action." (Swift, 2022, p.12)

In investigating the interface these chiropractors have with EBP, an incomplete understanding of the term, and an incongruence were uncovered. To help explain this, or perhaps even because of this, I concluded that they have an unbalanced relationship with forms of practice knowledge. A solution I propose is that chiropractors and chiropractic educational establishments apply and encourage a reflective mindset to all forms of practice knowledge.

6.5.4. Conclusion

In the first sentence of this thesis, I referred to this undertaking as a deeply personal account - a journey that began with my own dissonance with practice, craft and propositional knowledge. The journey has come full circle. After the years of thinking about this subject, and with the generous help of my participants, I have concluded that a thorough understanding of the ways in which practitioners use and generate knowledge, and their ability to examine that knowledge afresh every time they use it (reflective practice), is central to balancing the influences that all health care practitioners, but particularly chiropractors, must deal with.

Ultimately my conclusion refers to a skill all health care practitioners need to master if they are to deliver care to the best of their ability. This skill – reflective practice – at its core is simply the habit of examining the source of both the theory and practice of professional practice and constantly challenging one’s own assumptions and those of the environment in which we work. Reflective practice is an “interminable dialogue” underpinning practical wisdom in professional life (Kinsella, 2012, p.46). This reflective underpinning is important in the balance that chiropractors might strike when examining their own motivations for practice and ultimately how they best serve the people who seek their care. It has certainly changed my practice.

7. References

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8. Appendices

8.1. Appendix – Participant Information Sheet



PARTICIPANT INFORMATION SHEET

A qualitative study of how chiropractors' interface with evidence in practice.

Name of Researcher: Keith Walker

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Name of Supervisor: Dr David Wainwright

Contact details of Supervisor: d.wainwright@bath.ac.uk 01225 385477

This information sheet forms part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. Please read this information sheet carefully and ask one of the researchers named above if you are not clear about any details of the project.

1. What is the purpose of the project:

This study is being undertaken as part of a Professional Doctorate in Health. It seeks to look at how chiropractors consider, use and translate information about their work in the management of patients. Understanding this better will enable the profession to present themselves and their actions more accurately to other health professions and health policy makers. It will also contribute to a greater appreciation of the nature of current chiropractic practice and therefore inform curriculum planning.

2. Why have I been selected to take part?

You have been chosen to take part in this study as I (Keith Walker, researcher) hope that, as a practicing chiropractor, you will be able to contribute to my understanding of this topic. You will hold knowledge and understanding about clinical decision-making and it is this area that I wish to explore.

3. Do I have to take part?

It is up to you to decide. You will have an opportunity to ask questions about the study before you decide. I will describe the study and go through the information

sheet, which I will give to you. I will then ask you to sign a consent form to demonstrate that you agreed to take part.

You are free to withdraw at any time, without giving a reason.

4. What will I have to do?

If you decide to take part, I will want to observe you for a few hours of your normal practice and then conduct an interview. The interview will be in the form of a professional discussion about the decisions you made about your patients. Normally there will only be one session of observation and only one interview required. During the analysis, further clarification of some of the issues that you talked about might be needed. This is unlikely and would only be by telephone and at a time of your convenience.

The interaction and treatment decisions that you make about the patients that are observed will provide a trigger for the professional conversation undertaken in the subsequent interview. The patients that you see during the observation period will also be given an opportunity to agree or not to agree with taking part by being observed.

An information sheet similar to this one explaining why you are taking part in this study and giving them the opportunity to consent or refuse to be observed will be given to them. You will be able to see the patient information sheet before the study. No record of the patient's identity will be made.

The results of the observations will be noted down in a notebook at the time and later scanned into a digital format. The interview will be recorded with a digital sound recorder and then transcribed. Both sources of information will be kept on the encrypted university hard-drive and will be accessible only to the researcher and the supervisor of the study, Dr. D Wainwright. Neither your identity nor the identities of your patients will be included in the study.

The information will be analysed to try to identify common themes about how chiropractors process evidence in the treatment of their patients. These findings will then be discussed as part of my Professional Doctorate.

5. What are the possible benefits of taking part?

The study will not directly benefit you, but the information obtained from the study will help to increase the understanding of how chiropractors use evidence in their practice.

2

6. What are the possible disadvantages and risks of taking part?

The only significant disadvantage could be that a patient might object to being observed. You might also experience some inconvenience in the normal running of your clinic for a few hours. This should hopefully be minimised.

The General Chiropractic Council (GCC) requires every registrant to protect patients and colleagues from harm. In the extremely unlikely event that malpractice takes place the researcher, as a registered member of the GCC will have to report any observed breach. Withdrawal from the study will not affect this responsibility.

7. Who will have access to the information that I provide?

Only the researcher and supervisor will have access to information that you provide. All records will be treated as confidential.

8. What will happen to the data collected and results of the project?

Individual participant research data, such as interview transcripts will be confidential and given a research code, known only to the researcher. A master list identifying participants with the research codes will be held on a Bath University encrypted, password protected hard disc accessed only by the researcher or supervisor.

All information collected from you during the course of the research will be kept strictly confidential. Any paper records that are kept regarding the research will be kept in a locked cupboard in a locked office and accessible only to the researcher. Where possible, paper records will be scanned and then destroyed, the scans will subsequently be stored on a Bath University encrypted, password protected hard disc.

Transcriptions and digital recordings of the interviews will also be kept on a Bath University encrypted, password protected hard disc. The author and his supervisor, Dr. D Wainwright, will be the only people to have access to the drive.

The confidential data will be kept on the University hard drive for a period of 5 years.

The results of the study will form part of a Professional Doctorate being undertaken by the author. The results may also be written up for publication in an appropriate Journal. The doctorate or publications using this data will be written in such a way that participants will not be identifiable. A summary report will be sent to each participant at the end of the study outlining the findings.

9. Who has reviewed the project?

This project has been given a favourable opinion by the University of Bath, Research Ethics Approval Committee for Health (REACH) [reference: EP 17/18 110].

10. How can I withdraw from the project?

You may withdraw from the study at any time for any reason by simply contacting the researcher in person or by email or telephone. You do not have to give a reason why you wish to withdraw.

If you wish your data to be withdrawn from the study, then you will have to withdraw within a period of one month of the interview. If you withdraw from the study after

that date your data will have already become part of the on-going analysis as, in this type of research, the analysis of the data occurs immediately after it is collected.

If you withdraw from the study within that period, we will destroy all your digitally recorded interviews and any data relating to you.

11. What happens if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to the lead researcher, and he will do his best to answer your questions. He can be contacted on [REDACTED] or [REDACTED] or [REDACTED]

If you remain unhappy and wish to complain formally you can do this through Bath University's complaints procedure. Please contact the Chair of the Research Ethics Approval Committee for Health at the following address:

Dr James Betts [REDACTED] [REDACTED]

12. If I require further information who should I contact and how?

Thank you for expressing an interest in participating in this project. Please do not hesitate to get in touch with us if you would like some more information.

Name of Researcher: **Keith Walker**

Contact details of Researcher: [REDACTED]

Name of Supervisor: **Dr David Wainwright**

Contact details of Supervisor: [REDACTED] [REDACTED]

8.2. Appendix - Question Schedule

A Qualitative Study of how UK chiropractors' interface with evidence-based practice.

Participant:.....

Begin with describing the purpose of the interview –to find out how the participant engages with evidence-based practice. Secure verbal consent for recording.

Put the participant at ease. Ask a transition question:

What did you think of being observed?

Question Schedule:

EBM

What do you understand by the phrase evidence-based practice?

In what way does EBP apply to your practice this am/pm?

What place do you think EBP has in the profession now?

Some chiropractors think EBM is the way forward, some think that it is a threat. What do you think?

Evolving questions

Some would say that if a procedure is common in practice, that is a good enough reason to perform it. Some say this is a very poor reason to rate the evidence for a

practice. What do you think?

What sort of bearing on your practice do you think evidence that has been produced by medicine has?

A survey of British chiropractors in 2004 demonstrated that the typical chiropractor x-rayed or referred for x-ray, 25% of their patients. A recent survey showed that figure had dropped to 3%. What reasons do you think lie behind the drop?

What do you think of the use of x-rays in chiropractic?

What makes you think Chiropractic works?

SMT

When did you first learn about SMT?

What do you think about that now?

Why do you think your views have/have not changed?

How have you decided that SMT is helpful/unhelpful?

SMT is shown in the literature to be no more helpful than any other treatment; can you tell me why you use it/don't use it in your practice?

Decision Making and Results

Do you think the results that you see in your clinic trumps the literature?

Do you think results are always to be relied upon to make decisions?

How do you think you make decisions about why you do what you do?

What role does your experience take in your decision making?

What role does your university or formal learning take in your decision making?

What role does your own learning take in your decision making?

.....and finally

Is there anything else you would like to say about evidence-based practice and your practice?

Ending

Thank the participant for their time and effort.

Ask them if they would like a summary report of the findings from the study

Ask them if might be alright to check through the transcript when it is done to make sure that it accurately reflects their views.

Supplementary Questions

What influence do you think your college have on your current practice?

8.3. Appendix - Grace's Field Notes

Similarities - some perform any exam
impatiently, one of them a Rx. Not very
problem focused. Seems to do very similar
things to everyone:

- Generally still concentrate on doing things -
there is a general respectability about it &
every pt.
- The Rx only differs slightly: Adjustment
+/- all sorts of other stuff. Most Chiro
like to do things somewhat loosely rather
strength to or movement or comfort levels
to show the pt that they have done
something. - Test - Retest.

lots of claims about inflammation; trigger points
spasm. function.

Only some discussion of pt's condition. Very
little comparison - time!!!

I have not seen one person set strengthening
exercises. Some stretches, some minor
erg. advice but NO one sets exercises or
encourage to get moving. Or consequence of manual
full body exam - most. Tells people what
bits are better.

Chiro use their hands & eyes. They prod and
search + poke +

Most of the procedures seem to be →

nu:

Differences
not
flexi

Sim
to be
looked

8.4. Appendix – Data Management Plan

Postgraduate Data Management Plan

Overview

1.1 Postgraduate Researcher: Keith Walker
1.2 Project title: A Qualitative study of how chiropractors use evidence in practice
1.3 Project start and end dates: 01/04/2017 – 01/09/2021
1.4 Project context: The project aims to discover through the use of observation and semi-structured interviews how a sample of practicing chiropractors use evidence in practice.

Defining your data

2.1 Where does your data come from? I will record interviews with my participants using a digital audio recorder, then transcribe them into text. I will also make notes during observations of the chiropractors during their practice.
2.2 What formats are your data in? Audio recordings are stored as MP3; transcripts are stored in Word documents. Experimental observations are recorded in a paper notebook which will then be scanned and kept as pdfs on the research storage service
2.3 How often do you get new data? I will conduct a series of 20 interviews and observations over a six-month period.
2.4 How much data do you generate? I expect each interview to generate 100Mb of data and each observation to generate a tenth of a notebook and 20Mb of pdfs. Therefore, the entire project should generate 2.4 Gb of data and 2 notebooks.
2.5 Who owns the data you generate? According to my studentship agreement, the University owns all data I create, but I regain the copyright on publications based upon my data.

--

Looking after your data

<h3>1.1 Where do you store your data?</h3>
--

<p>My Data will be stored on the University Research Storage Service. The notebooks will be kept in a locked cupboard in my locked study.</p>

<h3>3.2 How are your data backed up?</h3>

<p>Data stored on the Research Storage Service is regularly backed up to encrypted, password protected hard drives. I will make sure I copy the latest versions of my working files there each day.</p>

<p>I will regularly scan my paper-notebook to my computer and then back these copies up.</p>
--

<p>I access my backup monthly and open some files to check that they are still usable.</p>
--

<h3>3.3 How do you structure and name your folders and files?</h3>
--

<p>A folder for each project phase, and within those a folder for each interview.</p>

<h3>3.4 How do you manage different versions of your files?</h3>
--

<p>There is only ever one version of each data file — new experiments create new data, which are stored in a new set of files.</p>
--

<h3>3.5 What additional information is required to understand the data?</h3>
--

<p>I keep additional notes about interviews in a Word document with the audio recordings and transcripts.</p>

<p>I will keep an NVivo file of the analysis with the data.</p>

Archiving your data

<h3>4.1 What data should be kept or destroyed after the end of your project?</h3>

I will keep all of my data, both raw and processed. However, all paper versions will be scanned and then destroyed.

4.2 For how long should data be kept after the end of your project?

I will keep my data for 5 years.

4.3 Where will the data you keep be archived?

My data will be archived in the University Research Archive.

4.4 When will data be moved into the archive?

I will archive a copy of data supporting my findings when a paper based upon them is accepted for publication.

4.5 Who is responsible for moving data to the archive and maintaining them?

I am responsible for depositing my data in an archive

Sharing your data

5.1 Who else has a right to see or use this data during the project?

Only my supervisor should have access to my data during the project.

5.2 What data should or shouldn't be shared openly and why?

All of my data may be shared openly at the end of my project when my research findings are published.

5.3 Who should have access to the final dataset and under what conditions?

Bona fide researchers will be granted access to the data upon request.

5.4 How will you share your final dataset?

Users will be able to download my data from the University's research data archive where they are archived.

Implementing your plan

6.1 Who is responsible for making sure this plan is followed?

I will take responsibility for carrying out the actions required by this plan and report them to my supervisor as appropriate.

6.2 How often will this plan be reviewed and updated?

My supervisor and I will review this plan every 6 months and will agree updates if necessary.

6.3 What actions have you identified from the rest of this plan?

*Set up a backup system and periodically test that I can restore from my backup.
Learn how to anonymise my data so that they can be shared.
Ensure that I request informed consent from my participants for sharing their data.
Scan my important results from my notebook at the end of each week.*

6.4 What policies are relevant to your project?

This project is covered by the University of Bath Research Data Policy and the EPSRC Policy Framework on Research Data.

6.5 What further information do you need to carry out these actions?

I need to take further advise about sharing information with my supervisor and how to use the University research repository.

8.5.Appendix – Participant Information Sheet

PARTICIPANT INFORMATION SHEET

A qualitative study of how chiropractors' interface with evidence in practice.

Name of Researcher: Keith Walker

Contact details of Researcher: [REDACTED] [REDACTED]

Name of Supervisor: Dr David Wainwright

Contact details of Supervisor: [REDACTED] [REDACTED]

This information sheet forms part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. Please read this information sheet carefully and ask one of the researchers named above if you are not clear about any details of the project.

1. What is the purpose of the project:

This study is being undertaken as part of a Professional Doctorate in Health. It seeks to look at how chiropractors consider, use and translate information about their work in the management of patients. Understanding this better will enable the profession to present themselves and their actions more accurately to other health professions and health policy makers. It will also contribute to a greater appreciation of the nature of current chiropractic practice and therefore inform curriculum planning.

2. Why have I been selected to take part?

You have been chosen to take part in this study as I (Keith Walker, researcher) hope that, as a practicing chiropractor, you will be able to contribute to my understanding of this topic. You will hold knowledge and understanding about clinical decision-making, and it is this area that I wish to explore.

3. Do I have to take part?

It is up to you to decide. You will have an opportunity to ask questions about the study before you decide. I will describe the study and go through the information sheet, which I will give to you. I will then ask you to sign a consent form to demonstrate that you agreed to take part.

You are free to withdraw at any time, without giving a reason.

4. What will I have to do?

If you decide to take part, I will want to observe you for a few hours of your normal practice and then conduct an interview. The interview will be in the form of a professional discussion about the decisions you made about your patients. Normally there will only be one session of observation and only one interview required. During the analysis, further clarification of some of the issues that you talked about might be needed. This is unlikely and would only be by telephone and at a time of your convenience.

The interaction and treatment decisions that you make about the patients that are observed will provide a trigger for the professional conversation undertaken in the subsequent interview. The patients that you see during the observation period will also be given an opportunity to agree or not to agree with taking part by being observed.

An information sheet similar to this one explaining why you are taking part in this study and giving them the opportunity to consent or refuse to be observed will be given to them. You will be able to see the patient information sheet before the study. No record of the patient's identity will be made.

The results of the observations will be noted down in a notebook at the time and later scanned into a digital format. The interview will be recorded with a digital sound recorder and then transcribed. Both sources of information will be kept on the encrypted university hard-drive and will be accessible only to the researcher and the supervisor of the study, Dr. D Wainwright. Neither your identity nor the identities of your patients will be included in the study.

The information will be analysed to try to identify common themes about how chiropractors process evidence in the treatment of their patients. These findings will then be discussed as part of my Professional Doctorate.

5. What are the possible benefits of taking part?

The study will not directly benefit you, but the information obtained from the study will help to increase the understanding of how chiropractors use evidence in their practice.

6. What are the possible disadvantages and risks of taking part?

The only significant disadvantage could be that a patient might object to being observed. You might also experience some inconvenience in the normal running of your clinic for a few hours. This should hopefully be minimised.

The General Chiropractic Council (GCC) requires every registrant to protect patients and colleagues from harm. In the extremely unlikely event that malpractice takes place the researcher, as a registered member of the GCC will have to report any observed breach. Withdrawal from the study will not affect this responsibility.

7. Who will have access to the information that I provide?

Only the researcher and supervisor will have access to information that you provide. All records will be treated as confidential.

8. What will happen to the data collected and results of the project?

Individual participant research data, such as interview transcripts will be confidential and given a research code, known only to the researcher. A master list identifying participants with the research codes will be held on a Bath University encrypted, password protected hard disc accessed only by the researcher or supervisor.

All information collected from you during the course of the research will be kept strictly confidential. Any paper records that are kept regarding the research will be kept in a locked cupboard in a locked office and accessible only to the researcher. Where possible, paper records will be scanned and then destroyed, the scans will subsequently be stored on a Bath University encrypted, password protected hard disc.

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If you have a concern about any aspect of this study, you should ask to speak to the lead researcher, and he will do his best to answer your questions. He can be contacted on [REDACTED] or [REDACTED] or [REDACTED]

If you remain unhappy and wish to complain formally you can do this through Bath University's complaints procedure. Please contact the Chair of the Research

Ethics Approval Committee for Health at the following address:

Dr James Betts

[REDACTED]

[REDACTED]

12. If I require further information, who should I contact and how?

Thank you for expressing an interest in participating in this project. Please do not hesitate to get in touch with us if you would like some more information.

Name of Researcher: **Keith Walker**

Contact details of Researcher: [REDACTED] [REDACTED]

Name of Supervisor: **Dr David Wainwright**

Contact details of Supervisor: [REDACTED]

8.6. Appendix – Codes from “An Imbalance of Practice Knowledge” Theme

The following is a printout of the quotations and observations that were brought together under the heading “Knowledge from codified material”. This and other codes contributed to the Theme 4 - ‘An Imbalance of Practice Knowledge’.

Files\\Interviews\\Andrea’s Interview - § 3 references coded [2.41% Coverage] Reference 1 - 0.37% Coverage

So, I think the evidence is looking at what the study says but having some sort of plausible explanation as to why that might be happening. As well.

Reference 2 - 1.26% Coverage

How important is it to you to have what we would frame a biological plausible reason for doing it?

Andrea: [00:10:22] So I think it is important and quite important to me. So, I’m not saying that sometimes if everything else has been thrown at something I might not go a little bit left field and try something a little bit different. As long as there’s no risk to the patient. But I’d say you know absolutely it’s important to me to have evidence or some sort of plausible explanation as to what I’m doing.

Reference 3 - 0.79% Coverage

I understand that some of the stuff we do doesn’t have a mountain of evidence to support it. But there’s a plausible explanation as to why it might work and that may that’s comfortable for me. So yeah, I think it’s a massive, massive importance to me to have some sort of reason as to why something might be effective.

Files\\Interviews\\Andy’s Interview - § 5 references coded [3.08% Coverage] Reference 1 - 0.67% Coverage

it’s got a lot of papers written about it now.

Keith: [00:09:36] OK, it has.

Andy: [00:09:37] It has, I mean I can give you the blurb.

Keith: [00:09:40] And when you’ve read those papers or looked at them.

Andy: [00:09:43] I haven’t, I’ve just looked at the references. (Laughs)

Reference 2 - 0.39% Coverage

Keith: [00:09:52] And do you think there comes a time when you will look at that that information.

Andy: [00:10:09] (pause) No, I’m not going to look at the raw studies.

Reference 3 - 0.67% Coverage

I prefer to look at guidelines and prefer other people to that work in terms of deciding the efficiency of studies in the finding how effective they are and the strength of the studies if that's strong enough to inform practice, so I prefer to go on the basis of those guidelines.

Reference 4 - 0.47% Coverage

Yeah, and the part of learning the technique was learning a lot of... learning about a little bit more about frozen shoulder itself and learning more about the biological plausibility of it.

Reference 5 - 0.89% Coverage

but it also looked at the biological plausibility of every aspect of.. of the treatment and how that you know why people get frozen shoulder why does this technique to work. And I found that to be entirely.

convincing and very well put together and I thought this would be a string to my bow as a chiropractor in treating patients with frozen shoulder because before,

Files\\Interviews\\Annabel's Interview - § 3 references coded [4.54% Coverage] Reference 1 - 0.39% Coverage

Keith: How do you keep current?

Annabel: Well, if I was to look up papers at uni, at college, I would go on PubMed, use books.

Reference 2 - 2.45% Coverage

Keith: Where do you think the majority of your information that you use today comes from?

Annabel: Being quite fresh out, I think it's from my textbooks, from my labs, from my lectures from general-

Keith: From college.

Annabel: From college, from general teachings at the moment and I do look up other bits as I go and if I've got particularly challenging patient that's not responding to my gold standard of stuff that I do and that you do as a general practice sometimes you go on a bit of a, you just do what you find because it's auto pilot, that's what I'm trying to ... You do, I think when you're seeing quite a lot of patients you have to go to a certain extent of go back to your toolbox a little bit and just do what you've got that you need to add to that as you go.

Reference 3 - 1.70% Coverage

Keith: What would count for you as evidence if I said to you, "Here's the evidence that stretching quads helps knee pain," what would you expect to see?

Annabel: A number of studies not just one and systematic reviews of those studies so that you can take from, you can be certain and have a higher percentage of confidence in the reviews. A wide range of studies, not all asking the same question or to get the same answer if that makes sense over a period of time as well so not a short study, a longer study and [crosstalk 00:15:27]

Files\\Interviews\\Bob's Interview - § 1 reference coded [0.46% Coverage] Reference 1 - 0.46% Coverage

Keith: [00:03:44] What role does research papers have in the way that you make decisions?

Bob: [00:03:51] Well they make me maybe look somewhere else.

Files\\Interviews\\Dot's Interview - § 2 references coded [2.23% Coverage] Reference 1 - 0.27% Coverage

Keith: [00:15:52] Do you think there is research for tape.

Dot: [00:15:55] I haven't seen any research.

Reference 2 - 1.96% Coverage

Keith: [00:21:11] How much of your work do you think is informed ... for instance if you're doing something now that you wouldn't have done say ten years ago. That might be informed by something you read in terms of literature.

Dot: [00:21:24] ...a lot More these days tis easily accessible now.

Keith: [00:21:30] What do you read now?

Dot: [00:21:30] Oh gosh I'm always on the NICE guidelines. And the BCA, every time there's a new journal or an article that goes up into the BCA, I'll always make sure I spend time reading that right. And A***** ..Ive got two A*****'s here.... A***** A***** and we're always emailing things to each other back and forth. And particularly when we took on a shockwave machine. The research behind that was quite important to me as well.

Files\\Interviews\\Faith's Interview - § 1 reference coded [0.69% Coverage] Reference 1 - 0.69% Coverage

Keith: [00:02:29] So what do you think how.... what impact does that have on chiropractic Practice in general, do you think.

Faith: [00:02:39] For me it means that I don't believe anything I read in the journal I read..... I go the other way.

Files\\Interviews\\Fayes' Interview - § 2 references coded [2.43% Coverage] Reference 1 - 1.02% Coverage

So, I try and read studies occasionally in what interests me. So, I had a patient with let say they've got colitis or something I might dive into gastric Journals and things to find out a bit more interest from there so I kind of follow what comes in my clinic really what's piqued my interest and that's how I gather a very widespread knowledge base.

Reference 2 - 1.41% Coverage

So, do you think that evidence-based practice could ever be a threat to what we do? Faye:

[00:14:00] Why would it be a threat. No.

Keith: [00:14:02] You don't see that?

Faye: [00:14:04] No, no it's just science. It's just us trying to understand Biology and Chemistry and the way that the mind can do psychosomatic stuff. and psychology and our....yes expanding on our knowledge. I don't see how that could ever be threatening because it is just a series of facts. Hopefully.

Files\\Interviews\\Grace's Interview - § 2 references coded [3.61% Coverage] Reference 1 - 2.68% Coverage

Can you tell me a little bit about where you learnt about that?

Grace: [00:16:14] I learn at university, And I learn it when I had was one of my first patient, I had with a disc problem and absolutely no clue what to do and as you just said try flexion distraction which at time was manual. So, it wasn't too nice. Especially because I had no idea how that works and what effect it had. So exactly then what the previous clinician put down, so I ended up doing 90 (Setting on the bench) flexion destruction. Which again I thought was a bit too much, so I did look a bit into it especially when it comes to explain to a patient what you are doing what... what is this thing that looks like a torture machine ...

Keith: [00:16:57] so when you said you looked a bit into it, where did you look?

Grace: [00:17:00] Internet and like, Google Scholar and look for.

Keith: [00:17:07] So did You find pieces... opinion pieces about it or research about it or books?

Grace: [00:17:15] No Research. I found research. I can't remember who is from because it was quite a few years ago and they always look going different videos, You tube videos.

Reference 2 - 0.93% Coverage

Keith: [00:22:33] Yeah, I'm just trying to see whether there's a difference between the things that inform what we do as opposed to the things that inform what other health care professionals do, like other physios or GP or podiatrists for that matter. Is there a difference in the information that we use to make a decision to do the things that we do?

Grace: [00:23:02] Probably not.

Files\\Interviews\\Helen's Interview - § 1 reference coded [0.36% Coverage] Reference 1 - 0.36% Coverage

Keith: [00:23:05] OK, if you're reading articles particularly outside the chiropractic press do you feel confident that you can understand them.

Helen: [00:23:14] Yeah.

Files\\Interviews\\John's Interview - § 2 references coded [2.76% Coverage] Reference 1 - 1.76% Coverage

It's almost as if you see an academic chiropractor.

John: [00:04:58] Yeah.

Keith: [00:04:59] As someone who perhaps lacks a bit of people touch. Yeah. Would that be right?

John: [00:05:11] Yeah if you were saying that perhaps not chiropractors as much as I've tried to shadow, I've not shadowed nearly as many as I would like to. But if we're looking at those, I say in the teaching situations that we've all graduated from. You certainly have a varying side of those particular academic. And I always refer back to the literature and the sensitivity and specificity of tests et cetera... come across.. can be potentially quite cold. And then you see others that understand perhaps the more psychosocial side of patients' presentation. And I

think that social side it's very hard to put into quantitative data. Yeah. That they might draw their conclusions from. Mm hmm.

Reference 2 - 1.00% Coverage

And then they try to discuss with peers and see if they utilize anything or common thread of information that shared. They probably look at studies but because there's a lack of it ...personally I find that there's a lack of organization or organization studies.... it's kind of you're looking for a needle in multiple haystacks. And it would be much better to at least have one haystack to search. And then you'd get to find it or if not turn into a library you know. So, it's really poorly Organized.

Files\\Interviews\\Lisa's interview - § 2 references coded [2.75% Coverage] Reference 1 - 1.05% Coverage

Keith: [00:03:26] And what do you feel.... You mentioned sensitivity and specificity. Yes. What do you think the sensitivity and specificity is of palpation.

Lisa: [00:03:36] I think it's pretty poor isn't it. Interrelation, inter..inter practitioner. Keith: [00:03:42] yeah

Lisa: [00:03:44] Agreeing I'm sorry I can't think of all right words.

Keith: [00:03:47] I Absolutely get....

Lisa: [00:03:49] I believe that's pretty poor.

Reference 2 - 1.70% Coverage

Keith: [00:33:52] What, what, what would you recognize in a research paper that would make you feel comfortable relying on its conclusion, if anything?

Lisa: [00:34:01] if it was primary research then the size of the study because if you only had 10 people then you know 90 percent wasn't to come by. Because if you add 100 people it's a bit more like it, isn't it. The size of the study, I suppose who conducted it, when it was done. The newer the research the more, the more, I'd give it, I suppose. RCTs and meta-analysis I always read through what it is.. what it is that they.. what they included and what did they exclude you know what.. what were their thoughts when they went, they formulated it. That's it off the top of my head.

Files\\Interviews\\Mary's Interview - § 3 references coded [4.82% Coverage] Reference 1 - 0.67% Coverage

And then if there's a patient that presents with something that's unusual for my practice that I've not looked at then I'll go in, read up on something that that may be the contra-indicators of treatment of those kinds of things..

Reference 2 - 1.69% Coverage

Keith: [00:08:51] So what guidelines would you be very familiar with or do you print off.

Mary: [00:08:58] The GCC ones I guess you know.... you know.. that what they called the uhm... Fitness to practice,... all those kinds of things.... being able to you know consent, making sure that patients understand what you're doing, all those kinds of things being safe, recording

accurate data all those kinds of things, confidentiality, they're all things that we do naturally. I would never not go go against those because we've signed a confidentiality and all those kinds of things.

Reference 3 - 2.46% Coverage

But then when I went on to read this piece of research about when they stripped a cadaver of their myofascia they found it was integral with every vessel, every organ, every muscle from... and if you stretched it out, it stretched over a hundred miles. It's incredible and it made me think, 'That it's so important to your treatment,' And I think that if the myofascia is tight then it has the ability to pull potentially joints out if you don't deal with it. And then when you..then ..then...there is a treatment.

consideration if a patient has had surgery and they've cut through the myofascia, that takes a while to heal and to knit back. And I thought that.. that ..I've just thought that sometimes if a patient is ridiculously tight, I look at her calfs and I thought oh my God we've got to deal with that because I just feel like it's always put her SI out.

Files\\Interviews\\Rob's Interview - § 1 reference coded [1.33% Coverage] Reference 1 - 1.33% Coverage

Keith: [00:48:03] How important is plausible mechanisms to you then? Rob: [00:48:06] Up to a point. Up to a point The.

Keith: [00:48:11] Because you're an engineer.

Rob: [00:48:12] Exactly.

Keith: [00:48:13] I would have thought that.

Rob: [00:48:15] But that, as I just said, I'm not exactly certain how that works. But as I said we know this amount is that much we don't know. If I can measure it working again afterwards....yes....then.. then the..the mechanism this is interesting...yes and I want to find out more about it. But if it works, it's not harming them and it's working then that's that's enough.

Files\\Interviews\\Ronnie's Interview - § 6 references coded [3.75% Coverage] Reference 1 - 0.37% Coverage

Now that is also backed up by a publication like the Back Book it says that most back problems are stiffening, tightening, jamming of joints. And if we get them moving again, we'll help them.

Reference 2 - 0.51% Coverage

Keith: [00:06:22] So there's a ...there's a.. a statement of choice there...good ones. In other words what you're saying is... is that good chiropractors read guidelines.

Ronnie: [00:06:33] Yeah absolutely because bad ones just don't rein in what they do.

Reference 3 - 0.26% Coverage

I know of a chiropractor and which I think is taking far too many X-rays. I can hand you the Royal College of chiropractic guidelines.

Reference 4 - 0.73% Coverage

I can hand you a research paper which indicates that really, it's not the right thing to just X-ray people the minute they walk through the door. It's better for us to be giving them a trial of treatment and only x ray if they're not responding. But some people out there are just not doing that. They just choosing to ignore that whether that's for financial gain or ignorance.

Reference 5 - 0.66% Coverage

I think there's been some studies that have shown that the findings on there don't necessarily correlate with what a patient is experiencing. It could also technically be negative showing a person's findings on one of those and it may even be misleading. So, I think there's been a revision of the clinical usefulness of this information.

Reference 6 - 1.23% Coverage

Ronnie: [00:07:53] I read something some years ago that in France they were basically using it to help keep people get over a back problem because by bracing the spine slightly it was effectively similar to a crutch where by giving you your back a rest it helped it to get better so the French were taking the attitude that it rested the spine and that might help. Here in the UK my understanding is from when I used to work in physio that it's had a detrimental effect on the core and therefore it's basically.... that's one reason why it's not recommended. The second thing is there's no no real evidence to indicate that it's effective.

Files\\Interviews\\Sam's Interview - § 2 references coded [5.03% Coverage] Reference 1 - 1.46% Coverage

Sam: [00:08:25] I think you can, you know, if a course seems like it comes from a kind of sensible sensible background then you know.. you can.. you can say okay, I think I will use this, it sounds like a sensible thing to do and Im going to give it a go and see how it works.

Keith: [00:08:44] So plausibility is a big part of it

Sam: [00:08:45] Yeah yeah definitely yeah.

Reference 2 - 3.57% Coverage

What would make you look at the paper and say "Blimey. I'm changing my practice."

Sam: [00:22:22] Ummm. Well, it was something that. Came from (shuffling papers) about the state of people's general nutrition so it was a government run thing. So, it was quite interesting in...in as much what it highlighted was that theres... even thought people might think they are eating well. In fact, when you look at the blood levels of various things like Selenium and various other vitamins and minerals Here we go.. There's quite a (?) So this was published by Public Health England 2/3rds of all of us continue to have lower vitamin D levels. So, things like that, you know, you think okay so you know a lot of your patients who were coming in may have you know they're going to be low in Vitamin D. So that you look at maybe symptoms related to that and a whole range of other different things as well.

Files\\Interviews\\Seb's Interview - § 5 references coded [3.52% Coverage] Reference 1 - 0.27% Coverage

Keith: [00:01:28] How do you access research?

Seb: [00:01:34] Mostly through courses. And I did a fair amount of the RSS stuff.

Reference 2 - 0.55% Coverage

Keith: [00:03:15] So if you had to say right. You know I would design the perfect study to make this evidence based what what would that be.

Seb: [00:03:26] Double blind controlled trial that was done by people who had nothing to do with them. Yeah, simple as that

Reference 3 - 0.14% Coverage

Seb: [00:06:02] I wish there were better tests to be honest like ..

Reference 4 - 0.71% Coverage

Keith: [00:12:52] And how much of our work do you think you can show evidence for.

Seb: [00:12:58] I think these days most of it. Certainly, there's enough to show that I'd like to explain things. In terms of the kind of mechanoreceptors, nerve tone and how it affects that. So, I think there's a lot now, especially, Heidi Havik and that lot.

Reference 5 - 1.84% Coverage

Keith: [00:13:59] Yeah yeah yeah yeah. So, but a lot of things like that. For instance, not that I know much about that, but certainly when you're talking in terms of the sort traditional explanations for some of what chiropractic is you know when you're talking about how a manipulation might affect the mechano-receptors and those sort of explanations, plausibility explanations for why what we do works. There's very little in terms of RCTs but there's lots in terms of. Descriptions do you do you think those descriptions hold as much weight. Would you say.

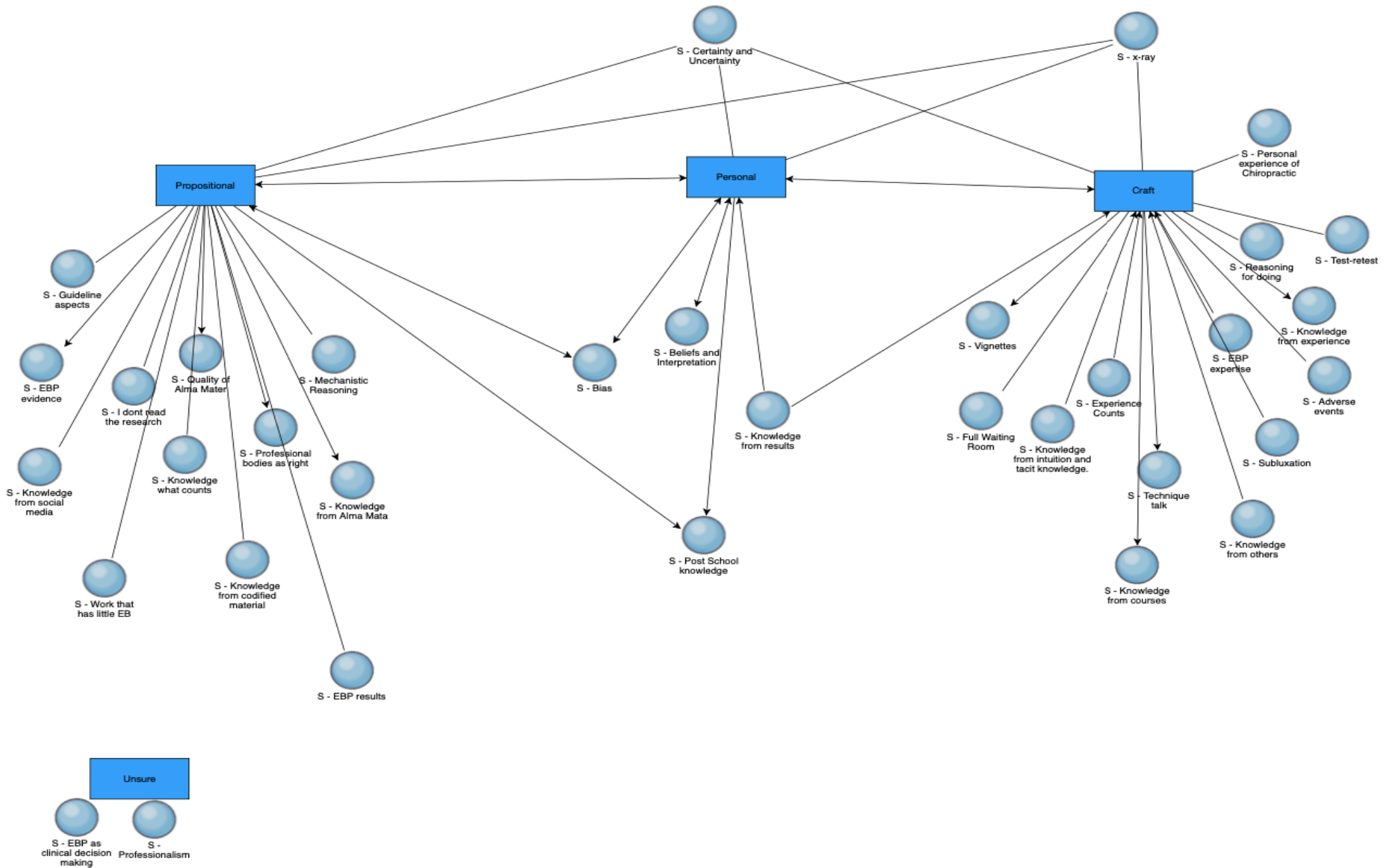
Seb: [00:14:47] You mean as an explanation. Keith: [00:14:47] As a justification for what we do.

Seb: [00:14:53] Yes. Because I I do think there is enough there actually. Yeah. Personally. I mean things change. Like when I was in college, we thought Melzak and Walls Gate theory Yes. That's obviously changed.

8.7. Appendix – All the codes of the Theme ‘An imbalance of practice knowledge’

Name	Files	References	Created On
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ● aTh 4 - What is the relationship with Knowledge 	26	554	27 Jul 2019 at 16:34
<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ● S - Beliefs and Interpretation 	8	13	10 Jun 2019 at 20:26
<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ● S - Bias 	6	10	10 Jun 2019 at 20:34
<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ● S - Certainty and Uncertainty 	6	11	10 Jun 2019 at 20:41
<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ● S - EBP as clinical decision making 	2	2	30 Jun 2019 at 12:07
<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ● S - EBP evidence 	12	38	11 Jun 2019 at 20:40
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<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ● S - Experience Counts 	9	14	11 Jun 2019 at 20:42
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<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ● S - I dont read the research 	5	6	3 Jul 2019 at 15:44
<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ● S - Knowledge from Alma Mata 	10	17	13 Jun 2019 at 19:34
<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ● S - Knowledge from codified material 	16	41	11 Jun 2019 at 20:47
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<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ● S - Knowledge from others 	11	23	12 Jun 2019 at 19:57
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<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ● S - Work that has little EB 	5	11	13 Jun 2019 at 19:01
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Knowledge relationship



8.9. Appendix – Reflective Journal showing the frustration of developing themes - dated 12/07/19.

I am beginning with the themes that I have to start to formulate, to create, to synthesise, to conjure, to elucidate, to search for, to uncover, to imagine, to construct. All of these terms I have read in relation to establishing the themes for my work. I am finding it a brain ache to get some sort of idea about what these 'output', sense-meaning themes are. Although, I have to say I'm feeling easier about bringing meaning into this than I am simply lumping them together in domains. Bucket filling.

So, I have tackled the first really big area - which makes sense. I am tackling the EBP domain. I am finding lots to do with EBP as a domain that chiropractors do not own. It is almost as if its other. Chiropractors still want it in their camp, and this is confusing, but most of them talk about it as if it is someone else issue 'a stick to beat us with' (I wish I could find that quote - note to self, label your quotes). However, there is something in this otherness and I am not sure that I have got to the bottom of it. Partly it is because Chiropractors do not to me seem confident in critical appraisal - who is? But more specifically because it seems to me that it is about a different domain for chiropractors, something different to what they do. Is this about the roots of our profession and that it still is mired in a sense of besieged belligerence when it comes to health. It's like an 18-year-old who believes he actually has got the answer to everything. Chiropractic looks outward with anger and at the same time with envy. It is a dualism that I am familiar with. It is also something I remember feeling myself and so I am tuning in to it very clearly. I have to question this and makes sure I am not just putting my own thoughts on this.

Otherness - How can I make this into a theme. Chiropractors are engaging with EBP with suspicion, a lack of knowledge, a sense that it has little to do with them, and an envy that other health professions have it. Essentially Chiropractors do not own EBP as theirs. It is something that is done to them, they don't do it or at least if they do, they do it in an abstract way. This is not a descriptor of a bunch of things that chiros have said. This is an interpretation of their meaning.

There is also something about dualism or even **incoherence**. I am beginning to think that whilst a lot of what chiropractors say is incoherent, it is also about a dualism or a pluralism that is not very convincing. EBP brings out this dualism very clearly - they want affirmation from the medical community but at the same time abhor the medical community. They want to be like the medical community but at the same time make a big deal about doing things in a holistic fashion which, they presuppose, is not how medicine does things. I really need to make sure that I save the quotes to back this up and I need to really in some way quantify this.

I am going to have to go into the idea of expertise and patient centredness. I think this is an important distinction. Andrea, who was an outlier, was very patient centred, and expert (in my view). What makes her an expert. I need to get to grips with the expert stuff.

Another thought is about dynamics. Knowledge and the professional there is constantly changing and updating. There seems to be a theme here about the lack of dynamism with regards to how chiropractors relate to knowledge and to EBP. I should test this theory in the data and then make that specific. i.e., do chiropractors take a dynamic view of their professional knowledge - how can I demonstrate that from the data, or do they take a structural and static position. Is this related to their understanding of biomechanics in the structure function debate - an aside but tantalising anyway.

8.10 Appendix – Reflective Journal discussing the selection of Straights and Mixers into the sample -dated 05/03/23.

“In retrospect I think I have always thought that the 'Straight Mixer' divide was some sort of cliff edge that people are on one side or the other. Following this study, and meeting and talking to folk, I am not sure that is the case. There was no cliff edge, rather a continuum. I still think I was sensible to not deliberately identify those who think in ways that privilege ideas that have no basis in biological plausibility or correlational or causative evidence, or any acknowledgement or understanding of the idea of validity or truth-fullness as Guba calls it. Unwittingly however I did see participants for whom this was the case and I also saw elements of this in chiropractors for whom I would have said were on the evidence side of the divide. Ultimately this goes back to the reasons why I have asked my question - how do other chiropractors deal with the dissonance that I felt. In order to ask that question, there has to be dissonance - people of faith rarely feel this.”