



Reflecting on new models for osteopathy – it's time for change

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ABSTRACT

Recent evidence has undermined much of the biomechanical based reasoning of osteopathy. This has led to considerable discussion of the future of the distinctiveness of osteopathy and proposals for new models of osteopathic approaches. Current research on pain processes, aetiology and clinical effectiveness supports a biopsychosocial perspective in clinical reasoning for musculoskeletal pain. New clinical reasoning models proposed by osteopaths Fryer and Lederman are considered alongside models from other professions. Process based models are based on a biopsychosocial approach and involve changes to diagnostic reasoning and treatment rationale. Evidence shows the need for multidimension, multimodal approaches in treatment of musculoskeletal pain. These models may provide a means of applying evidence to practice and a rationale for hands-on manual therapy. Adoption of new models of osteopathic care require change to practice incorporating education and more active approaches alongside hands-on care. Consideration is given to how osteopaths need to adapt and the future of osteopathy in musculoskeletal medicine.

Consideration of new models of osteopathy – it's time for change

Osteopathic discussion in recent years has focussed on the distinctiveness of osteopathic practice and osteopathic principles [1–8]. There is debate about defining the principles of osteopathy and whether they remain relevant today [1–8]. Vogel [9] highlighted the ongoing tension between old and new and the need to critically examine the nature of practice. The challenge was made [9] to consider osteopathic models and seek consensus in the debate to clearly articulate the osteopathic approach and position. For many professions [10–12] research evidence has undermined their biomechanical foundations leading to a need to reconceptualise diagnostic and treatment approaches. Models have been proposed by osteopaths and other manual therapy professions based on a predominantly biopsychosocial framework. Two osteopathic models and three models from other manual therapy professions will be considered and compared in this article. Osteopaths will find many of these models, or certainly elements of them, applicable to practice. There are commonalities as manual therapies are using the same evidence-base for understanding pain mechanisms [13,14] to inform their models of therapeutic reasoning.

Osteopaths, Fryer [15,16] and Lederman [17] propose process-based models for osteopathic diagnostic and treatment rationale. Process-based models are based on identifying the patient's presentation by process or processes. For Fryer [16] this is the pain process – acute or chronic and neuropathic, nociceptive or central sensitisation. Lederman's [17] process proposal is based on identifying the patient's recovery process – repair, adaptation or symptomatic.

Somatic dysfunction is a key concept in osteopathic diagnostic reasoning, identifying dysfunction of a group of tissues, a region or a

single articulation [18]. Fryer [15,16] made a compelling argument for the lack of validity of the somatic dysfunction concept and a purely biomechanical osteopathic approach. He presents a new evidence-based rationale [16] for osteopathic diagnosis and treatment. Fryer [15] identifies how osteopathic treatment techniques may influence biological and psychological elements of pain processes and provides guidance for the appropriate osteopathic approaches for different patient presentations. Fryer's [16] rationale is based on identifying pain as acute or chronic and either neuropathic, nociceptive or central sensitisation or a combination alongside psychosocial risk factors such as fears and beliefs about pain and activity. Appropriate manual therapy techniques and aspects of psychological support are applied with different emphasis according to the patient's presentation. The rationale [16] reframes osteopathic therapeutic mechanisms within a biopsychosocial framework. Whilst others have previously proposed similar models [19,20] this model uses these concepts and explicitly applies them to osteopathic reasoning and treatment.

Lederman's process approach [17] has arisen from the need to provide an alternative model to the structural model [41] due to the lack of supportive research evidence for structural diagnostic reasoning and treatment rationale [17]. Lederman uses the self-healing foundational concept [21] of osteopathy to propose a new model of osteopathic treatment supporting the patient's recovery processes rather than trying to influence biomechanics. This process approach is developed from the biopsychosocial and evidence-based practice models but applied within osteopathic concepts.

Newell [22] proposes a Contextually Aided Recovery (CARE) model from a chiropractic perspective which utilises the role of contextual factors and placebo. The CARE approach identifies physical signals such

as touch, verbal cues and environmental cues as powerful stimulants for analgesia, and immune and motor modulation in musculoskeletal conditions. This model is a means of reframing the rationale for a biomechanical approach but does not consider psychosocial contributors to symptoms. Physiotherapists have also proposed new diagnostic and treatment frameworks as described in the following three models. Tousignant-Laflamme et al. [23] 'pull together' the research on low back pain management incorporating suggestions from Rabey et al. [24] to suggest a model based on identifying drivers behind pain. They [23] categorize five pain drivers based on the International Classification of Functioning, Disability and Health model [25] – nociceptive, nervous system dysfunction, comorbidity, cognitive-emotional and contextual drivers. The assessment forms a profile of the elements driving the patient's symptoms and therefore the priorities for treatment.

Cognitive functional therapy [26] and Gifford's [27] 'shopping basket' treatment based models have similar multi-modal biopsychosocial approaches, they both use graded exposure alongside education as their main treatment modalities. Graded exposure is a behavioural method [28–30] which produces disconfirmations between expectations of pain and harm by exposing patients to a feared movement in a controlled manner. This method [29,31] has been shown to reduced pain-related fear, catastrophizing and disability and change movement behaviour. Pain education [32] has been shown to decrease rumination [33] and improve understanding and physical performance [34] in chronic pain conditions. Patients are provided with education on the neurophysiology of pain [35]. Gifford's shopping basket [27] has six compartments – biomedical, psychosocial, disability/functional restrictions, impairments, general health and pain. The approach identifies areas to target to enable patients to achieve self-efficacy and aim for thoughtless, fearless movement. Cognitive functional therapy [26,28] identifies personalised, contextual targets for clinical treatment and self-management after detailed listening to the patient story and context and examining behavioural response to pain. There are three treatment aims [26] – make sense of the pain through education and behaviour change, exposure with control through graded exposure techniques and lifestyle change aimed at achieving goals.

This article will give brief consideration of the background before considering treatment models and discussing the future of osteopathy.

What are the current issues?

Recent research [36–40] has demonstrated unreliability of biomechanical palpatory skills and diagnostic reasoning. Many evidence based summaries [15–17,23,41,42] have drawn together evidence of the inaccuracy of palpation [40,43], unreliability of postural [37,44,45], tissue-based diagnosis and ineffectiveness of manual therapy techniques to achieve significant changes in posture, tension and mobility [41]. Osteopathy was built on a foundation of structure governing function⁵. Removing this foundation for practice has felt like a Jenga-type effect on diagnostic reasoning and application of osteopathic manual skills.

Osteopathy has historically recognised a holistic approach [6] but until recently the focus of diagnosis and treatment was almost exclusively biomechanical [46]. Although often clinically effective [47–52], osteopaths have now been found to have had incorrect clinical reasoning [41,46] as many of the postural and structural diagnostic explanations have now been found to be invalid, particularly in relation to chronic pain [15–17,23,41,42]. Structural clinical language can cause a nocebo effect [53,54] with patient behaviour and beliefs being affected by diagnostic labels for example twisted vertebra and degenerative joints. There is however evidence that placebo, is no longer an inert concept but can be a powerful positive effect in manual therapy [22,55,56]. Positive clinical language can improve patient self-efficacy [53,57] and a placebo treatment outcome can be induced by treatment modalities, clinical environment and language, as identified in the

CARe model [22].

The biopsychosocial framework is widely accepted as the optimal model for treating musculoskeletal pain. A biopsychosocial model is not to be applied in a dichotic sense so pain is categorised as either biological or a psychosocial somatisation [58]. Pain is considered to be an individual, complex multifactorial behaviour pattern which cannot be divided into physical and psychosocial concepts [59]. Experientially pain is based on an individual's assessment of the danger of a nociceptive input based on the intensity of the input, prior experience, beliefs and contextual factors [26]. The biopsychosocial framework seeks to encompass historical and current risk factors from previous physical and psychological trauma, social dysfunction, gender and environmental and alterations in psychological processes such as pain cognition, hypervigilance, catastrophizing, self-efficacy, fear avoidance and distress alongside the biological factors in pain [60]. Psychosocial factors are significant in acute low back pain [61] and chronic pain [59]. Peripheral nociceptive factors need to be addressed as well as psychosocial factors. Appropriate treatment for pain needs to encompass a biopsychosocial approach addressing biological and psychosocial factors.

Alongside evidence based practice, there is a need for values-based practice [62,63]. This enables therapeutic approaches to be personalised according to patient values. Identifying values or goals is the premise for several of the clinical models [23,26,27] being discussed.

This background has led to questions about what is effective about osteopathic treatment –the conversation, hands-on treatment, placebo and the short or long-term improvements including pain-relief, quality of life, self-efficacy, understanding symptoms and achieving goals. The current evidence against purely biomechanical models has challenged clinical reasoning for all manual therapy professions [10,15–17,26]. Osteopaths may have cause to contemplate the necessity of a change in practice – diagnostic reasoning and explanations, treatment rationale and application, communication and potentially redefining the role of osteopathy.

Musculoskeletal problems, particularly chronic pain, are increasingly prevalent and costly to society [64,65] giving rise to criticism of the effectiveness of manual therapy approaches. Tools have been developed to identify patients who will recover well and those at risk of chronicity [66,67]. Chronic pain is a multi-dimensional, multi-faceted, biopsychosocial process unique to each patient [15–17,23,24,53]. Manual therapies are striving to increase understanding of pain and application of effective treatment [15–17,23,26].

New clinical reasoning models for osteopathy

It is in this context that two new models [16,17] for a diagnostic and treatment framework have been proposed.

Lederman's process based approach [17] aims at supporting repair, adaptation and alleviation of symptoms rather than removing structural and biomechanical obstacles impeding recovery. The practitioner identifies which process or processes the patient is in – repair, adaptation or symptomatic recovery and then applies the appropriate manual therapy according to the dominance of their processes. The practitioner role is "an educator and facilitator rather than a mechanic" [17].

Fryer [15,16] draws together research on the inadequacies of the biomechanical approach into a clinical framework to move forward. The integrated osteopathic approach [15,16] proposed by Fryer identifies the patient's pain process. Pain is categorised as acute or chronic according to duration of symptoms and also whether it is neuropathic, nociceptive, central sensitisation or mixed. The case history and validated tools such as the Orebro Musculoskeletal Pain Screening questionnaire [66] and the Start back screening tool [67] are recommended for identifying psychosocial factors. Manual therapy or psychosocial education are applied as the primary focus of treatment depending on whether impairment is acute or chronic and the dominant pain

category.

Whilst Fryer's model [16] provides a way of reconceptualising patient presentations by assessing their pain process it does not discuss a recovery pathway. Categorising patients symptoms as acute or chronic alongside their pain process and identifying their risk of progressing from acute to chronic is helpful clinically and provides rationale for treatment methods. Treatment approaches may not be so distinct when there is concurrent nociception and central sensitisation and transitioning from acute to chronic phases. Fryer [16] recognises lifestyle and social factors but they are not represented in the treatment model.

Both of these osteopathic models narrowly focus on the patient's presenting condition but recognising that identifying which tissue is affected is not possible, they have moved to process recognition. There is a major difference in processes, Lederman's [17] model aims to support the body's inherent self-healing ability based on osteopathic concepts whilst Fryer's model [16] aims to identify and influence biological and psychosocial factors. It could be argued that the biopsychosocial aspect is simply added to existing biomechanical concepts. These models do not include contextual, lifestyle and social factors such as sleep hygiene, physical conditioning, work and relationship satisfaction and risk factors which may contribute to the patient presentation [60]. Both models retain the focus of the practitioner as expert rather than a collaborative patient-centred, values-based approach. They do not focus on active treatments and increasing patient self-efficacy as much as models from other professions which will be discussed below.

Alternative clinical reasoning models

Alternative models [22,23,26,27] from other professions are more explicit in the identification of psychosocial, lifestyle and risk factors in diagnostic reasoning. They also advocate process approaches but are more holistic in considering contextual and historical factors. Social factors are often a poorly identified area [23].

Cognitive functional therapy [26] and Gifford's [27] shopping basket approaches, from a physiotherapy perspective, utilise a wide range of biomechanical and psychosocial evidence to inform an individualised narrative-based treatment process. Patient-centred treatment approaches [26,27] include education [68], graded exposure [69], exercise [70] and minimal hands-on treatment [47] tailored to the patient's values and goals [62].

Tousignant-Laflamme et al.'s [23] drivers model assesses the patient's multi-factorial presentation through the history, examination and use of screening tools to form an individual diagnostic reasoning model of pain drivers and treatment priorities. Five categories of drivers are identified – nociceptive, nervous system dysfunction, comorbidity, cognitive-emotional and contextual. This approach enables identification of risk factors and psychosocial issues alongside biomechanical factors more explicitly than the osteopathic models.

Newell [22] proposed a model of ethically applying knowledge of placebo effects – physical, verbal and environmental as a powerful therapeutic tool. Exercise evidence now demonstrates that no one exercise is better than another for improving symptoms of low back pain [70,71]. The key factors are that the patient is exercising and enjoying what they are doing. The effectiveness of osteopathy may also have a contextual placebo [22] beyond technique application – the patient enjoys the style of treatment and therefore improves. Whilst this may provide part of the rationale for treatment outcomes it does not address the issues underlying biomechanical diagnostic reasoning.

There is an emphasis on the use of active treatment strategies in order to improve patient self-efficacy which helps to reduce impairment, pain severity and distress in chronic pain [72]. Passive coping is a risk factor for disabling pain [73].

Whilst some are proposing hands-off, active treatments there is an argument for consumer-led treatment [22,74]. Hands-on treatment has merit in terms of down-regulation of descending mechanism [75],

temporary hypoalgesia [76,77] and sensorimotor stimulation [78] and patients want hands-on treatment [74]. This potentially could be appropriately applied within a treatment model.

The osteopathic models [15–17] give a framework by which osteopathy can move forward but perhaps practitioners need to consider how other models [23,26,27] could be incorporated to be more comprehensive and effective. Manual therapy does have a role to play in musculoskeletal pain both from a perspective of therapeutic effectiveness [15–17] as well as consumer led-demand [74]. There is a risk of these models categorising patients and increasing catastrophising and rumination [53], effective communication will be important [32]. They both emphasise that effective treatment needs to incorporate the biopsychosocial approach and address factors contributing to ill-health. There is a greater role for education in the treatment of pain – catastrophizing, fears and beliefs, stress, disturbed sleep, lack of exercise [79].

Other considerations

A question arises whether musculoskeletal pain always originates from acute injuries in the tissues, which both osteopathic models considered in this paper presuppose. Identifying psychosocial elements in the patient history identifies predisposing factors for pain developing at this time in their lives. Poor sleep hygiene, job dissatisfaction, lack of exercise, stress, bereavement, fears, poor self-efficacy and psychological inflexibility are some known predisposing factors [80]. Genetic, psychological and environmental factors are also predisposing traits for chronic pain [60]. Perhaps there could be another element to diagnostic reasoning which considers the patients traits and high-risk states which puts them at risk of a pain episode.

With relation to chronic pain there is increasing recognition of the importance of spiritual well-being [81] as has been advocated for many years in palliative care [82,83]. Adopting a biopsychospiritual approach may further improve patient care [81,84,85]. It is recognised that all human beings have spiritual needs [81] – a meaning and significance in life, seeing a purpose in things, connection with others, a secure future, belonging, valued, to be good at something, leading to a sense of inner peace and well-being [81,86,87]. Spirituality, which is not necessarily a religious faith, can lead to positive or negative coping with pain [88,89]. For example, interpretation of the pain – some may consider it a judgement or punishment, others may consider the pain is for their good to teach them something and improve their spiritual well-being. Bereavement also has spiritual impact that can be associated with pain [88,90], particularly considering the elements of loss of control and separation alongside the spiritual meaning of the parting of a loved one. A biopsychospiritual approach would incorporate empathetic listening, investigating meaning and purpose for the patient, impact of symptoms on meaning and purpose, incorporating pain-related beliefs into cognitive behavioural therapy approaches, using personal spiritual practice as part of treatment, and using the connection to others provided through religion [81,91].

Clinical reasoning models will continue to evolve with some intriguing aspects emerging – the influence of allostatic load on chronic pain [92,93] and exercises to directly influence the brain [94]. Touch is arguably a defining skill of osteopaths. As discussed, palpatory tissue diagnosis is unreliable but there has been very little research on the therapeutic value of touch [95,96] and its application within the biopsychosocial framework.

Osteopathic principles

In 2002, the Osteopathic Principles were redefined by a committee [2,97] as:

- 1) The human being is a dynamic unit of function
- 2) The body possesses self-regulatory mechanisms that are self-healing

in nature

- 3) Structure and function are inter-related at all levels
- 4) Rational treatment based on these principles

There has been considerable debate about osteopathic principles and their relevance to osteopaths today [1–6,11] and even whether principles are still necessary [98]. Evidence-based practice upholds that patients are unique individuals requiring unique treatments. Osteopaths have always recognised the need to treat the person and not the condition [1–6]. The process approach model [17] supports the principle of osteopathy supporting self-regulatory mechanisms. Using biopsychosocial clinical models perhaps makes osteopathy less clinically distinguishable from other manual therapies. Tyreman [98,99] has repeatedly raised the question of the distinctiveness of osteopathy. It is considered that osteopathy is less well defined by its principles but professional values of what osteopaths do and their contribution to healthcare [98]. Perhaps developing the evidence base for touch may be the means of defining the value of osteopathy within musculoskeletal medicine [99].

A new model proposal

Having considered new osteopathic models and models from other manual therapies a proposal for an osteopathic biopsychosocial approach is outlined below (Fig. 1). Critique of the model would be valued and it will continue to evolve in the light of new evidence. A process approach to diagnosing the pain condition is put in the context of a biopsychosocial model. It is a whole person assessment appreciating the multidimensional nature of the patient's context both at the onset of symptoms and on presentation. The process approach could be either that proposed by Fryer [16] or Lederman [17]. The model indicates patient assessment to include the usual physical and neurological screening processes supplemented by screening tools. There are many options for treatment interventions which can be utilised according to the assessment outcomes and patient values or goals.

Adopting a new model

Adapting practice requires reflection and the process of change applied to diagnostic reasoning, treatment rationale and recording of cases. Expert practitioners have been identified not as those with the

most years in practice but those who are reflective, questioning, critical, changing and willing to be exposed to alternative ideas [100]. Physiotherapists [101], chiropractors [10] and osteopaths [102] have all recognised that a barrier to adopting the biopsychosocial approach is a lack of perceived skill and the lack of opportunity to acquire and then implement psychosocial skills in practice [106]. There is scope for a professional supportive network for those seeking to change and adopt more biopsychosocial, evidence informed approaches.

Osteopaths traditionally have focussed on their hands as trade tools. Evidence highlights the ears, mouth, heart, mind and intentions [22,103] are important tools to utilise to be an effective practitioner. Osteopathy has an important role in assisting patients to achieve well-being as educators, hands-on treatment providers, actively empowering and enabling patients and signposting or working collaboratively.

Osteopaths need to accept that palpatory skills and tissues are not as reliable or significant as previously thought. It remains important to use well-developed skills of patient assessment to identify conditions requiring referral and apply safe treatment. Diagnostic reasoning needs to move away from tissue-based diagnosis. Identifying which process patients are in and psychosocial factors may be the means of changing practice. There needs to be renewed understanding of the effects of manual treatment and discouraging passive reliance on the practitioner [16,65]. Patients need to be active and engaged in their treatment. This may mean osteopaths adapting treatment to include active elements of exercise and movement training, empowering patients. Education is key alongside addressing psychosocial factors [59–61]. Regular maintenance treatment must not be because patients believe they need to be 'aligned' or must have treatment to remain 'structurally sound' [10,72,73]. The merits of ongoing treatment may be in the de-stressing, pleasurable element of receiving treatment [74] for general well-being.

With any change there tends to be a pendulum swing. Regarding the biopsychosocial model there is a risk that the pendulum is swinging to far towards the psychosocial approach [12,104]. Some are advocating a hands-off approach [104] to treatment and purely using a psychosocial, educational approach. The model proposed supports hands-on treatment appropriately applied according to the patient's process.

There can be a practitioner-centred focus in the desire to preserve osteopathy. A patient-centred focus will be to provide the best treatment for patients – the most efficient, effective and harmless. There are signs that manual therapy approaches are merging for the benefit of best care approaches. Osteopaths remain highly skilled in

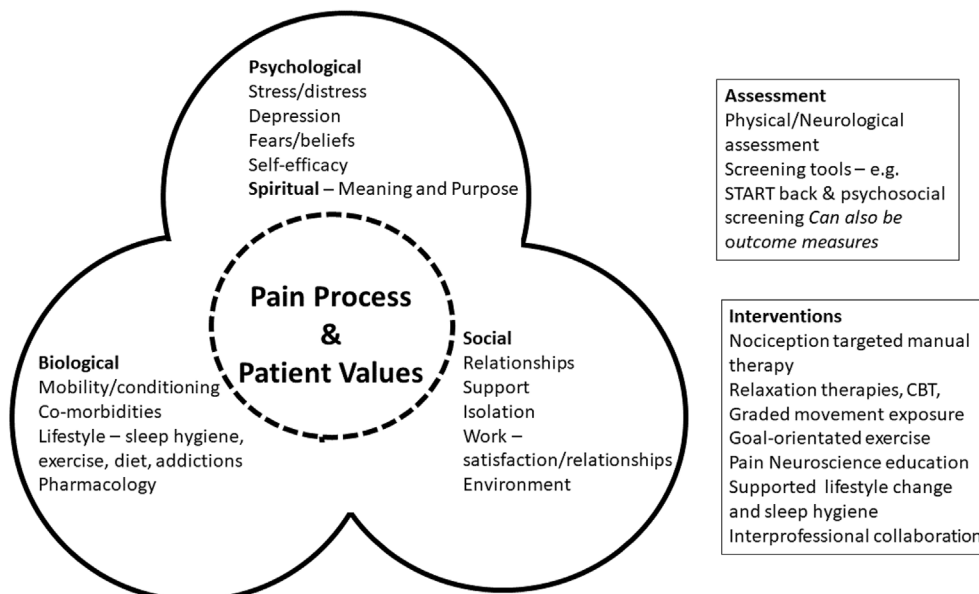


Fig. 1. Proposed model for Osteopathic Biopsychosocial approach.

musculoskeletal medicine and particularly touch. Identifying professional values and the evidence-base for touch in chronic pain may be a means of preserving osteopathy [99].

These models have yet to be proven to be effective in care of patients and arresting the prevalence of chronic pain. Osteopaths need to reflect on how to adopt evidence-based processes – not simply the application of Fryer's or Lederman's models but a broader approach. Process-based approaches are the theme of new models alongside multi-dimensional, multi-modal, individualised treatment programmes [105] focussed on goal-directed outcomes including the expertise of other professions. There are still more answers to discover, hence models will continue to adapt as new evidence emerges.

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