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OT and AM contributed to the design and conception of the paper. Both authors have read and approved the final manuscript.

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Abstract

This commentary critically examines the foundational assumptions, practices and claimed distinctiveness upon which osteopathy was built and continues to be structured. Five areas which are considered to be highly problematic for osteopathy, namely its weak theoretical basis, inherent biomedicalism, monointerventionism, default practitioner-centredness and predilection for implausible mechanisms. It is argued that these areas require considerable reflection and action as if not remedied, they constitute a major threat to the development, unity and legitimacy of the osteopathic profession. Ongoing reconceptualisation of underpinning theories, assumptions and associated skills informed by current evidence and knowledge from disciplines outside of the osteopathic domain is necessary for professional maturation.

Key words: Osteopathic Medicine, Musculoskeletal manipulations; Professional identity; Manual therapy; Manipulative therapies

Introduction

In response to an invitation to reflect on osteopathy's future and potential threats [1], this commentary critically examines the foundational assumptions, practices and claimed distinctiveness upon which osteopathy was built and continues to be structured. We outline five areas which we consider are significantly problematic for osteopathy, namely its weak theoretical basis, inherent biomedicalism, monointerventionism, practitioner-centredness and predilection for implausible mechanisms. Our contention is that significant intellectual and research mileage is needed in these areas, building upon ongoing work to develop tools and methods to develop knowledge of them within osteopathy [2,3]**.** Osteopathy needs to continue to expand not only its evidence base but also develop a more sophisticated understanding of its practice epistemology, i.e. how the profession views knowledge, the sources of knowledge and the nature/structure of knowledge which is used for and in practice [4,5]. With this in mind, we also suggest possible directions for development to make the problems identified 'less wrong' for osteopaths and the profession more generally. Finally, osteopathy is not unique in this regard and other professions face similar challenges [6,7]. However, 'tu quoque' arguments and 'whataboutisms' detract from the focused critical self-reflection needed for osteopathy to develop and mature as a contemporary healthcare profession.

Weak theoretical basis

In many countries, regulators have set out standards of practice which have codified the state's expectations around the ethical conduct, skills and competencies of being a professional osteopath [8]. However, within these professional standards of practice, osteopaths approach their work and all that the endeavour entails from a certain perspective and with a set of assumptions. Whether an individual practitioner is aware of them or not, assumptions will be held about core aspects of being and practising as an osteopath. The theories upon which professions are structured have in-built assumptions around the nature of practice, knowledge and skills through which professionals operate [9]. The prevailing theoretical basis for osteopathy has largely resided in the original or re-interpreted writings of AT Still [10,11] his successors describe his ideas as 'osteopathic philosophy' which gave rise to the 'osteopathic principles' [12]. From these early texts, numerous and more substantive theories have been put forward to support examination and treatment methods (for example [13–15]) and these have acted as explanatory frameworks to help osteopaths attempt to make sense of patient presentations and to guide clinical action.

The main problems with regards to such osteopathic theory are firstly their biomedical nature in so much as they presume that pain, illness and disease is due to an objective mechanical deviation in structure, function or physiology. Such biomedical assumptions about illness positions osteopaths as knowing and skilled agents who can reach into the workings of their patients machinery to intervene in its function. This is in contrast to models of healthcare which reposition the patient as a *person*, motivating the practitioner to take part in meaning-making [16],

recognise the biopsychosociality of illness [17] and to focus on the social stories, structures and contexts from which suffering arises and healthcare takes place [18].

The second issue is their utility. Such theories of 'osteopathic philosophy' were developed to make sense of medicine, disease and suffering in the context of 1800's Missouri, USA. There has been little critical thought on how these ideas relate to modern times and their utility to address the questions, problems and needs which society is currently facing. As an example of the perceived primacy of traditional osteopathic theory, practitioners often evoke AT Still to conjure up their 'osteopathic thinking' whilst connecting with an osteopathic professional identity [19]. In pondering "what would Still do?", osteopaths are channelling the thoughts and words of an individual from the past to guide action and identity in the present, and in doing so exhibit a religiosity which has been also noticed within some chiropractic ideology [20] which shares a similar history as osteopathy [21]. A practical devotion to an 'osteopathic calling' contrasts with osteopathy as a contemporary profession which critically draws on the best available methods and knowledge to effectively serve society and people that it cares for. We acknowledge that, for many, adherence to these original assumptions is tightly interwoven with their sense of 'feeling like an osteopath' [22,23], but propose that an updating of osteopathy's theoretical basis is an opportunity to develop best osteopathic practice rather than a threat that diminishes it.

Along with others [24,25], we argue that there is a wealth of theory from across disciplines such as sociology and philosophy which can support practice and develop osteopathy. For example, frameworks from critical theory ask questions related to power, resistance and discourses [26]. 'Critical osteopathy' would offer an analytical means to ask questions about the structures that guide and maintain osteopathic practice and question the discourses which precede and define who we are as osteopaths [27]. Critical theory has been used to good effect to understand where the physiotherapy profession has come from and where it may be going [6,28].

Phenomenology is another theoretical perspective which has value for osteopathy and osteopaths. As a philosophy, phenomenology is concerned with the first-person lived experience and the 'whatness' of the phenomena we encounter in our lives [29]. Adopting a phenomenological view of osteopathy might motivate osteopaths to consider more deeply how patients are experiencing their illness, pain and their bodies. 'Phenomenological osteopathy' may help osteopathy to view the body as *lived* rather than *machine* and offer new opportunities for old treatments [16] (e.g. the use of osteopathic manual therapy techniques) [30,31].

Finally, dispositional theory[32] views causation as highly complex and context-sensitive rather than singular and regular (e.g. simple linear biomechanical cause-effect relationships). 'Dispositional osteopathy' can help osteopaths consider the type and forms of evidence that are relevant for their individual patients and develop new frameworks to better make sense of medical complexity and the uniqueness and individuality of patients' illness and variation of treatment outcomes.

In summary, theory and philosophy from *outside* and *beyond* the osteopathic domain can provide rich frameworks to understand ourselves, our history and our patients in contemporary and potentially more useful ways. Theoretically-informed osteopathy can help osteopaths to

become aware of their own particular stance, and the stance of the profession. Thinking *with* theory [33] would helps osteopaths and researchers to ask novel, creative and important questions, think analytically about our practice and help make sense of the inescapable complexity of caring for the health of people. We argue that the manual techniques and methods of osteopathy are the *least interesting* thing about the profession [34]; theory lays the groundwork for methods and techniques - so osteopaths are encouraged to think critically about theory and philosophy first.

Inherent biomedicalism

An intense focus on the human body through a deep appreciation of anatomy and physiology is frequently heralded as a distinguishing virtue of osteopathy [35,36]. There are numerous examples in the early literature which confirm anatomy as foundational knowledge within osteopathy. Take for example the following quotations; "osteopathy is a science based upon the principle that man is a machine" [11](pg 235). "You begin with anatomy, and you end with anatomy, a knowledge of anatomy is all you want or need" [10] (pg 16). Many osteopaths, educators and writers have taken these infamous quotes from AT Still more than literally - but embodied them resulting in the deepest commitment to the project of anatomy unlike any other. A profound knowledge of the interconnection of bodily systems, organs and structures results in a position of 'anatomical anythinggoesism' to justify osteopathic treatment for a range of healthcare conditions [14,37]. However, a devotion to causally explain the origin of pain, disease and suffering as a malfunction of simple structural and functional connected phenomena which can be targeted through specific manual interventions osteopathy is a commitment to biomedicalism [38].

Initially, osteopathy placed all its eggs in the anatomical basket with a resulting conception that like all machines, the body breaks down and *needs* repair from a skilled and knowledgeable "human engineer" [11] (pg 253). However, such an approach has significant limitations in the context of contemporary healthcare practice. For example, the current management of back pain foregrounds positive notions of health such as the ability of people (and bodies) to adapt and the potential for the person to self-manage their health concerns in the face of social, physical and emotional challenges [39,40]. Osteopathy claims a holistic view of health, yet prioritises anatomy which are evidently reductive and contradictory stances. This creates epistemic dissonance as osteopaths focus almost exclusively upon a small subset of body-based manual interventions directed to anatomical-biomechanical features of people [41,42] whilst espousing the virtue of 'treating the whole person.'

In holding a rigidly obsessive commitment to human physical form and structure, osteopathy sees the body as un-lived [24], objective [43], estranged from the patient or person [44] and fails to link (or ignores) the perceived physical findings (such as restricted movement in joints and tissues) with the rich narrative generated with the patient [45]. Furthermore, a focus on the 'abnormal' (e.g. somatic dysfunction [46]) perpetuates experiences of social exclusion for disabled persons [47]. The ableism which is embedded within much of osteopathic theory, philosophy and ideology provides an exclusionary narrative which views any impairment, disability or deviation from

'normal perfection' as inherently negative and necessitates intervention from an osteopath [48]. Furthermore, recently it has been outlined the potential undesired and harmful effects of communicating to patients (knowingly or otherwise) osteopathy's historic over-reliance on spine-centric and skull-centric models of health and disease [49].

For many osteopaths, including those in European nations, the biomedical model dominates practice and education [50–52]. The reasons for this are likely to be a complex interaction of cultural, societal and healthcare norms/expectations and also osteopathy being earlier in their process of professionalisation and where the identification and treatment of 'somatic dysfunction' is embedded in regulatory frameworks and viewed as a core competency - as is the case in Italy for example [53]. Furthermore, global benchmarks for training in osteopathy are clearly biomedically orientated [54] and are likely to perpetuate biomedical thinking and practice from the 'grassroots'. There is some evidence suggesting that some osteopaths in the UK [55,56] pay attention to factors besides biomedical and that they may appreciate the psychosocial features which might be relevant to their patients' presenting complaint. However, there is currently little evidence that favourable attitudes towards the biopsychosocial model result in observable changes to an osteopath's treatment approach in practice and more research is needed to determine how attitudes translate (or not) to clinicians' behaviour and clinical outcomes. Despite a growing understanding of the importance of psychosocial determinants of health [57], manual therapy applied to the body structures remains by far the most frequently utilised intervention used by osteopaths in the UK [41,42]. Furthermore, recent systematic review evidence indicates osteopathic practice remains situated within a biomedical model of care [58]. One cannot help but notice the continued litany of posturo-structural-biomechanical focused literature, CPD and discourse [59] which continues to encase osteopathic education and practice [60] suggesting biomedicalism continues to flourish within osteopathy. This is unsurprising given that it can be challenging to 'break the biomedical chains' and move towards more biopsychosocial ways of practice [61,62]. Notwithstanding the ongoing critiques to further develop the biopsychosocial model (eg via enactivism [63,64]), osteopaths are encouraged to explore the range of contemporary frameworks available and reflect on how they might enhance their own clinical work.[18,65–67]

Monointerventionism

Touch during manual assessment and treatment appears to be fundamental for osteopaths' clinical practice [68] and identity [69]. Embedded within osteopathic discourse are maxims such as 'an osteopath's most powerful tools are their hands', 'trust your hands' and 'let your hands guide you'. However, such sayings evoke notions of purposefully minimising any cognitive, critical and reflexive processes during touch-based interaction. Despite the claim that osteopathy is a 'philosophy' [70] and a 'holistic practice' [8]; the evidence is clear that globally osteopaths rely almost exclusively on a single intervention - manual therapy [41,42,71,72] (except in the US where there is a continued and increasing decline in the use of OMT amongst osteopathic physicians [73]). Nevertheless, this reliance on manual therapy has resulted in a superficial categorising of osteopathic practice by way of technique applied to the neuromusculoskeletal system

('structural osteopathy'), internal organs ('visceral osteopathy') and light touch applied to the head and body ('cranial osteopathy') [8,71]. This categorisation fails to represent osteopathy as a complex healthcare intervention [74] involving the development of a therapeutic alliance, education, promotion of self-management, exercise and other related healthcare interventions.. Osteopathic body-focused monointerventionism willfully ignores the complexity involved in modern healthcare. Furthermore, outcomes for musculoskeletal conditions such as low back pain have been repeatedly shown to be more related to psycho-sociological factors [75,76], than to structural imaging findings [77,78] or specific spinal postures [79,80]. The current evidence that addressing these structuro-mechanical factors ameliorates MSK pain is weak [81].

By reducing osteopathic care to touch-only interventions fails to realise the range of therapeutic approaches which have a growing evidence base. One way to broaden osteopathy's range of interventions is through psychologically-informed practice, which entails reconceptualising current 'tools', removing old ones and incorporating new theories and methods to account for the complex psychosocial context of the individual patient [82]. The management of many health conditions now advocates a multi-model approach which can map to the individuality of the person and the unique constellation of different causal phenomena which may be responsible for their pain and illness. Expertise in osteopathic practice entails 'professional artistry' whereby the ambiguity and complexity of patients' individual problems and social context means osteopaths have to critically integrate a range of sources of knowledge to construct an understanding of the situation and guide clinical action [83].

The idea that anyone can learn (to a meaningful depth) about a person's complex social history, experiences, cognitions, beliefs, values, motivations, expectations and ethics through predominantly touching their skin/body is naive at best and delusional at worst. However, notwithstanding the poor reliability of manual palpation [84], non-specific [85,86] and modest effects of manual therapy (e.g for back pain) [87], hands-on skills can still be a useful approach; but only if osteopathy draws on efforts to reconceptualise such skills in light of contemporary evidence and theory [85,88,89]. We argue that the purposeful and judicious use of 'hands-on', 'hands-off' or 'hands-less' interventions can enhance osteopathic care rather than diminish it.

Practitioner-centred

Person-centred care has been considered an important, and for some a defining feature of osteopathic practice [8,90,91]. However, osteopathy's focus on the practitioner 'knowing lots about' and 'doing things to' their patient's body entails a practitioner-centred approach and presents tensions which make adopting a person-centred stance [92]. A shared decision-making goes (SDM) far beyond asking patients which manual therapy technique they'd prefer but a positional shift of the clinician to emphasise the patient as an active partner, and the primacy of the person to share their knowledge, experience and values [93] so that decisions can be mutually negotiated and agreed together [94]. SDM is a requirement of many osteopathic regulators, including in UK [95], Australia [96], New Zealand [97] and standards of practice in Europe [98]. However,

the underpinning values of SDM create tensions with osteopathy which may inhibit its realisation into clinical practice. As previously argued, osteopathy's biomedically oriented theoretical basis informs and supports technical expertise through manual skills, and this risks creating imbalanced patient-practitioner relationships and defaults to a position of care which is consistent with paternalism [99,100]. Qualitative research supports the proposition that some osteopaths adopt paternalistic practitioner-centred approaches to their practice and decision-making [101]. Developing and improving SDM within UK osteopathy has been identified as a priority of the osteopathy regulator in the UK [102].

We advocate that osteopathic care focused on the *personhood* of patients [103], is not only a more *ethical* way to practice, but also potentially more *effective*. Although mechanistically complex and not fully understood, the nature of therapeutic relationships can influence clinical outcomes from musculoskeletal problems [104,105] critically reflect on the nature of relationship that they endeavor to develop with their patients, and consider that by only focusing on a 'deep connection' with the body that this blinkers them to connect with patients in more meaningful, personal and humanistic ways.[106] There are now increasing frameworks available which can support osteopaths' relational repositioning and facilitate a movement towards a more person-centered way of being with patients. [107–109]

Implausible mechanisms

Osteopathy is replete with overly complicated, convoluted and often unfalsifiable theories based on the interpretations, experiences and observations of a small number of individuals. Others have highlighted the incoherence within models, lack of theoretical and empirical support, oversimplification, pseudoscience, and absence of consensus over the validity of the profession's conceptual framework are some of the challenges osteopathic education and research are facing [110,111]. Traditionally, clinical osteopathic expertise is predicated upon the mastery of discrete technical skills and the acquisition of biomedical knowledge, and this seems at odds with current theories of expertise which centre on self-reflexivity and critical evaluation of practice knowledge [112]. In contrast, many of the claims and premises within osteopathic theories and frameworks require a suspension of critical thinking prior or during application [113]. These explanations are used to support, justify and direct hands-on treatments which are able to both access the functioning of the bodily system and also specifically intervene along the mechanistic chain to improve the health of the individual. [114]

Osteopaths should be absolutely dedicated to understanding the plurality of truths in the form of their patients' experiences of pain, suffering and care in the context of their *social world*. Truth in the social world is fluid, multiple and context dependent [115]. However, adopting such a relativist stance on truth in regards to the *biological world* is problematic [116]. Such subjectivity cannot sensibly extend to claims about objective phenomena which are situated within biological reality such as movement of cranial sutures [13], repositioning misaligned vertebrae [117], the ability to manually influence the heart and pericardium [118], re-directing flow of the cerebral spinal fluid [119] or physically manipulating brain structures [120]. Implausible claims such as these pose a

fundamental question for osteopathy - to what degree can osteopaths' accounts of their manual interaction with patients and their bodies legitimately represent an independent biological reality. [114] Many of the current mechanistic explanatory frameworks in osteopathy are yet to address this problem of validity and as a result the profession confuses the lived subjective experience of osteopaths and patients, with objective truth claims such as physical movements and happenings in human structure and neuro-endocrinology [121].

Biological phenomena exist independently (objectively) whilst our knowledge of and about them may change (epistemologically) [122,123]. Take for example changes to an intervertebral disc. It was once thought that such things were pathoanatomical and represented 'damage'. However, with continued empirical research, knowledge was re-constructed about such phenomena and our meaning and attitudes to it changed [77]. So whilst our understanding of the disc has advanced, the observable physical changes were ontologically said to exist independently of our knowledge of them at the time. If osteopathy is to survive and thrive, it must be reflexive and open to changes in knowledge and willing to discard that which is no longer epistemologically true and be inquisitive as to alternative explanations and theories. In this regard the recent attempts to develop osteopathy's theoretical mechanistic basis [31,124] is welcomed.

The areas discussed in this paper will require osteopaths, educators, CPD providers and policy writers to work together to imagine osteopathy to be otherwise [28]; to move the profession into new and different ways of thinking, being and practising in order to meet the contemporary challenges that the profession, patients and society face. This paradigm shift will require a herculean effort and not least for practitioners to be critical about knowledge and practice (see recent masterclass in this journal [125]). However, the evidence that osteopaths across the world are open to changing and informing their practice with new knowledge is an encouraging sign that such a shift in the very meaning, purpose and nature of the profession is possible [126–130].

Conclusions

In this paper we have discussed some of the fundamental challenges that osteopathy and osteopaths face and offered some suggestions to make these founding features 'less wrong'. These foundational areas require considerable consideration and if not addressed constitute a major threat to the development, unity and legitimacy of osteopathy as a healthcare profession. We argue for a reconceptualisation of underpinning theories and assumptions and associated skills which is informed by current evidence and knowledge from disciplines outside of the osteopathic domain. This is not easy given the crystalised professional identity of osteopaths being manual manipulators of the body informed by distinct osteopathic philosophy, principles and theories. However, osteopathy and osteopaths must continue to critically reflect on and respond to these issues in order to professionally mature and provide best care to patients.

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Implications for Practice

- Osteopathy's weak theoretical basis, biomedicalism, monointerventionism, practitioner-centredness and implausible mechanisms are problematic.
- These constitute a major threat to the development, unity and legitimacy of the osteopathy.
- Ongoing critical reflection, practice reconceptualization and research are needed for professional maturation.
- Osteopaths should draw on theory and evidence from outside the osteopathic domain.