



The Biopsychosocial model: Redefining osteopathic philosophy?

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Abstract The Biopsychosocial model (BPS), first proposed by Engel in 1980, can be considered as both a philosophy of clinical care, and a practical guide to individual patient management. The BPS model also has the benefit of extensive supportive literature. Osteopathic philosophy, however, remains poorly defined and suffers from both a lack of published corroborating evidence of effectiveness, and a universally accepted definition of practice. This potentially leaves the osteopathic profession drifting against the tide of evidence-based practice clinging to the 'life raft' of what it perceives to be a distinctive philosophy, but without the evidence to support or justify swimming against the tide. As the osteopathic profession reviews its underpinning philosophy and its relevance in a fast changing evidence-based care environment, the BPS model potentially provides the answers to a number of the issues surrounding the current and future practice of osteopathy. In reviewing the accepted tenets of osteopathic philosophy in light of the BPS model, it is necessary to briefly consider aspects of science and evidence as well as the art of clinical care which all contribute to evidence-based 'best practice'.

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Introduction

The Biopsychosocial model (BPS) was first proposed by George Engel in 1980.¹ The model can

be considered as both a philosophy of clinical care for the practitioner which includes a practical guide to individual patient management and aspects of self appraisal for the practitioner.² The model is recognized by the World Health Organization, and enshrined in many clinical practice guidelines such as The Australian Guide to the

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Management of Acute Musculoskeletal Pain.³ The model also informs the broadest range of clinical practice from behavioral medicine to pre-surgical screening in both primary and secondary care.

However, the evidence-based model per se is considered by some of its detractors to be a philosophy of its own.⁴ Whilst it seems unlikely that patients would deliberately choose a treatment that was not supported by current best evidence,⁴ there appears to be support for the notion that osteopathic courses should be based around A.T. Still's original concepts, and taught from the (scientifically discredited) Vitalist school of thought, as evidenced by a recent professional debate in Auckland.

Engel's criticism of the biomedical view should resonate with osteopaths, because it may be considered as being broadly consistent with osteopathic philosophy. Engel criticized dualistic and reductionist thinking, and the concept of the clinician as an impartial observer to the subjective experience of the patient.² The idea that mind and body should be considered and treated separately, and that every aspect of the clinical case not objectively verified should be discounted, was questioned by Engel although it reflected the biomedical view of the time. The seemingly pure biomechanical focus of some contemporary osteopathic education and practices may also fall into this trap, which may not be consistent with osteopathic philosophy or the accepted current evidence-based model of healthcare that embraces the BPS model.

The Biopsychosocial model

In Engel's model, a patient's symptoms need to be conceptualized as the result of a dynamic interaction between psychological, social and pathophysiologic variables.⁵ Engel's model has subsequently been described as a philosophical understanding of how illness, disease and suffering are affected by different levels of organization, from the molecular to societal.² In many clinical practice guidelines, such as those produced in Australia in 2003 for the management of Acute Low Back Pain, these levels of organization are reflected in the flags classifications. 'Red flags' are indicators of potential pathophysiologic compromise, 'Yellow flags' are potential indicators of psychosocial distress, and 'Blue' and 'Black flags' which represent societal organization, the rules and regulations of everyday life. The BPS model provides a framework for understanding how the patients' subjective experience contributes to establishing an accurate diagnosis, negotiated outcomes and empathetic care.² Specifically, the

BPS model recognizes the complexity of mind body interaction, aspects of circular causality and concepts of patient centered care including compassion, empathy and consideration for the patients' suffering.

The BPS model is now recognized as the pre-eminent scientific model central to the understanding of pain in general and musculoskeletal pain in particular.³ The BPS model also informs some aspects business and health management. The BPS model of low back pain and disability was originally endorsed by the World Health Organization in 2000.⁸ An unsupportive work place and management style are associated with absenteeism from work, and those certificated as not fit for work, and receiving wage related compensation, are known to recover more slowly.⁶

An extensive literature on the BPS model has been published over the years since Engel first identified the need to broaden the reductionist biomedical approach. The model is a combination of a number of clinical elements that contribute to pain and disability, and include physical (somatic) dysfunction, distress, 'sickness behavior' beliefs and coping.⁷ The Biopsychosocial model of low back pain and disability was originally endorsed by the World Health Organization in 2000.⁸ Research has continued to identify a large range of variables that potentially impact on the individuals' mental and physical health, wellbeing, and ability to recover from illness and disease.^{9–16}

Whilst the complexity of some the interactions of these factors remains elusive to individual research studies, there is a growing recognition that many of the functional somatic syndromes seen in osteopathic practice, such as non-specific musculoskeletal pain, gastro-intestinal disturbance and headache, are the product of complex interactions, not single precipitating incidents or events. Although traditionally understood from the perspective of the 'tissue causing symptoms,' these somatic symptoms may be centrally generated and then expressed in the periphery. Whilst such disorders may not exhibit significant pathologies in the peripheral tissues, they are associated with significant neurobiological, physiological and even anatomical changes in the central nervous system.¹⁷

Osteopathic philosophy

The 4 basic tenants of osteopathic philosophy are well known and described in terms such as:

- The body is a unit, the person a unit of mind, body, spirit

- The body is capable of self regulation, healing and health maintenance
- Structure and function are reciprocally interrelated
- Rational treatment based on the above¹⁸

Broad philosophical statements such as the above have both positive and negative attributes, in so far as they make osteopathic practice difficult to define, while potentially allowing a broad scope of practice. Current osteopathic practice reflects a somewhat mechanistic interpretation of Still's model of 'holistic medicine' which was born out of the loss of 3 of his children to meningitis, and the medically induced morphine addiction of his brother. One interpretation of Stills' philosophy was that he was against the indiscriminate prescription of drugs, rather than drugs per se, whilst combining principles of holistic medicine with the art of the bone setter.¹⁹ AT Still believed the body had its own powers to combat disease, and likened human anatomy to a steam engine which was susceptible to similar mechanical principals and dysfunction. This dysfunction, in Still's mind, came from the dislocation of bones, abnormal ligaments and tight muscles putting pressure on both blood vessels and nerves, 'the osteopathic lesion'. The 'banner of osteopathy' reflected the thinking and knowledge of the day, being the 22 June 1874.

This philosophical approach is still appealing to those members of the profession who potentially fear evidence-based clinical practice guidelines against which their clinical decisions may be judged. The evidence-based approach may also be perceived as limiting the 'art' of the profession, and not consistent with osteopathic philosophy. However, in the era of evidence-based care in which the profession now operates, this philosophical position is not easily defensible without evidence supporting their validity. Attempts by the profession to establish clinical effectiveness inevitably have been based on the linear cause—effect model favored by biomedicine, but which may be considered as potentially contrary to the essence of osteopathic philosophy, and the specificity of the BPS model. The BPS model considers structural causality in terms of one part of 'a complex interaction' of events. The body when considered as a unit must also be susceptible to such complex interactions.

Science and evidence

It can be difficult to separate out science and evidence from a discussion about the philosophical constructs of what is, after all, a clinical discipline.

A clinical practice that is based entirely on the philosophical beliefs of the practitioner may not be in the best interests of the patient, and is clearly not defensible from a scientific perspective.

On the other hand, an entirely scientific evidence-based approach to practice may also be perceived as cold and uncaring by the patient, when the practitioner reviews only the data obtained from diagnostic testing in preference to understanding the patient from within their own context. Broad scientific and philosophical considerations need to be integrated to achieve the best possible outcomes, in order to meet the clinical concerns of the practitioner and the expectations of the patient.

Scientific research is ranked by a hierarchy of evidence such as in the Australian Guidelines.

For the management of Acute Musculoskeletal Pain.³ The hierarchy ranges from meta-analysis (the highest form of evidence) through randomized controlled trials, cohort studies to observation and expert consensus. This well established hierarchy is largely based on Bradford Hills' criteria which were published in 1965.²⁰ Bradford Hills' criteria suggested that evidence from experiments is more persuasive than observational studies, and that the statistical association between cause and effect reflects a true causal relationship if the association demonstrates a number of factors including strength, consistency, specificity, reversibility, temporal sequence and biological plausibility.²⁰

Bradford Hills' criteria have served the advancement of the science of biomedicine extremely well, the advancement of medical knowledge also informing aspects of osteopathic practice. However some may consider Bradford Hills' criteria to potentially conflict with the interpretation of osteopathic philosophy and to a lesser degree Engel's BPS model of complexity and circular causality.

Discussion

There is an old saying about not throwing the baby out with the bathwater. In considering whether we should update or discard the basic tenants of osteopathic philosophy, there is perhaps a case for adopting this old credo.

When AT Still flung to the breeze his banner of osteopathy in 1874, medical intervention in the mid-west of the United States consisted of harsh and toxic remedies.²¹ Pasteur's work demonstrating that infections were caused by microbes and Virchow's consideration of cellular pathology

were both reported around the mid 1850s, but were largely unknown in the United States at that time. The scientific drive to practice what is known, rather than what was thought (science as opposed to philosophy), has continued to gain momentum up to the present, whilst the osteopathic profession has largely been devoting its energies to recognition and statutory regulation which is now largely complete. The profession can now turn its collective attention to examining what AT Still thought and how these thoughts equate to what is currently known and evidentially supported. Until this discussion is complete there may be no reason, as yet, to discard both bath-water and baby in osteopathic terms, at least.

The philosophical thoughts that underpinned osteopathic philosophy were not entirely new, or particularly distinctive. One hundred and fifty years before Still's proclamation, Stahl wrote that the (then current) understanding of the physical sciences was not enough to explain human behavior. He espoused unity of the organism, a personal element of liability to illness, the mental component of physical disease, and the role of emotions in treating patients.²² Stahls' sentiments, as well as those of others, have been expressed by a variety of medical authors' throughout history since Hippocrates. Historically, AT Still's philosophy came at a time when the seeds of divergence between medical science and philosophy had already been sown by Virchow, whose publications contributed significantly to the disease model of human illness. Physicians from all disciplines got swept up in the tide of physical disease as a model of diagnosis for musculoskeletal pain and disability.

The interpretation of Stills philosophy will undoubtedly continue to inform debate amongst the osteopathic profession, as individuals weigh the philosophy in terms of their own experiences, prejudices and beliefs. The context of the time will also influence the debate, such as the current drive toward evidence-based practice. The science can never be absolute, but can and does contribute to 'best practice,' but only when practitioners are prepared to alter their practice and beliefs when necessary.

The biomedical model, including mind body dualism, has largely predominated throughout osteopathic history to the present day. However, another enlightened American physician recognized more than thirty years ago that in perusing a cold and clinical scientific model of practice much was potentially being lost in the clinical encounter. George Engel's paper on the clinical application of the BPS model, published in 1980,

highlighted the case of a patient with chest pain whose cardiac arrhythmia was exacerbated by the lack of empathy shown by his attending physician.¹ Engel's model is not so much adding psychosocial components to Virchow's disease model, but conceptualizing symptoms from the outset as being the result of a complex interaction between the psychological, social and pathophysiologic variables.⁵ This complex interaction and the necessity to consider each individual patient from within their own context is also recognized as essential in musculoskeletal presentations including low back pain.²³

The BPS model is also recognized as both a philosophy of practice and practical clinical guide² and so potentially brings us full circle to a model that is philosophically driven, evidence-based, and can be considered largely consistent with a wider interpretation of osteopathic philosophy.

Osteopaths recognize that no one component of the body works in isolation from the rest. Emotional and psychological factors play a significant part in wellbeing and recovery from illness. Neuroscience contributes to our understanding of spirituality and moral values as emotional regulators²⁴ further endorsing Still, Engel's and other models of complex interactions occurring within the mind and body, in order to maintain Allostasis.²⁵ The BPS model may allow a deeper understanding of the four tenets of osteopathic medicine. The body is capable of self regulation, healing and health maintenance, a definition of a complex interaction to say the least! The BPS model allows us to understand how varied interactions between the person and their environment influence health and wellbeing to a much greater extent than could have been envisaged in Still's day.

The reciprocal interrelationship between structure and function has also been widely investigated in a variety of disciplines. Neuroscience again demonstrates that structure is in fact influenced (not governed) by function. A measurable increase in gray matter has been demonstrated in individuals after only eight weeks of practicing mindful meditation.²⁶ Mindfulness is a simple, if illusive, reflective practice of observing ones' thoughts which creates a measurable change in the structure of the brain. 'Neurons that fire together wire together'.²⁷ Human behavior may alter bodily function, which can impact significantly on structural integrity; obesity, cardiovascular disease and type II diabetes are some of the more obvious results of potentially mal-adaptive behavior.²⁸ Here again,

the influence and complex interaction of BPS factors cannot be under-estimated.

Mal-adaptive and aberrant behavior is now considered an aspect of 'Behavioral Medicine' rather than a simple 'choice of lifestyle factors'. The understanding of what drives such behavior, and potentially how the individual may (and often may not) become aware of their behavior and modify it, can be understood from with the BPS model and a holistic osteopathic philosophy.

Finally rational (osteopathic) treatment is based on the other three tenants of osteopathic philosophy. In light of these models it can be argued that an osteopathic approach based on biomechanical variables alone is not consistent with osteopathic philosophy or the evidence-based BPS model. Rational treatment should be based on a sound philosophical approach integrated with, and informed by, best available current evidence and defensible scientific criteria. The re-defining or integration of osteopathic philosophy with the BPS model is one way in which the osteopathic profession can achieve the goal of rational and defensible intervention across a broad scope of specific and non specific symptom pictures. It allows the historical philosophical tenants of the profession to remain intact, whilst providing the evidence-based model necessary in the present era to be communicated to patients, whilst allowing for scientific dialog with other professions.

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