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Can the failing western medical paradigm be shifted using the principle of sustainability?

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Abstract

This paper evaluates how existing models of western, evidence-based medicine, have yielded a dominant medical paradigm that is relatively ineffective, untenable and almost certainly unsustainable. It demonstrates how inadequate attention to chronic disease prevention and the over-use of new-to-nature pharmaceuticals, given in particular their high cost and relatively low and unpredictable efficacy, contribute to the unsustainability of the existing allopathic paradigm. It goes on to show how the principle of sustainability might be used to diffuse conflict between protagonists of 'conventional', western medicine and those who favour modalities, often deemed as being 'alternative', 'complementary' or 'integrated', that are intrinsically compatible with the human body and the natural environment. The paper outlines some of the key requisites likely to be required for the development of truly sustainable, ecologically-based healthcare systems.

Introduction

Within a mere half century or so, a diversity of healthcare traditions from around the world, many of which have evolved independently over thousands of years, have been partially or fully replaced by the prevailing, western medical paradigm.[1] In this paradigm, the use of new-to-nature therapeutic agents has become by far the dominant means of disease management. Over the last century, we saw a decline in the average rate of infectious diseases linked mainly to improvements in public health, nutrition and use of antibiotics.[2] Chronic disease rates, in contrast, have risen significantly.[3] This latter increase can only be attributed partially to the extension in adult lifespan in the western world.[4] Chronic diseases are expected to account for almost 75% of deaths worldwide by 2020.[3]

One of the most outstanding features defining the prevailing western medical model is its reliance on evidence. The concept of 'evidence-based medicine' (EBM) was postulated first by Sackett and others in 1992.[5] The originators of the concept intended that EBM represent an analytical approach to medicine by which the results of clinical and basic research, clinical experience, observation and empathy with the patient are combined to provide the most appropriate treatment and care by the medical clinician. A mere four years after the publication of the concept, Sackett and colleagues complained that the EBM concept was

being widely misinterpreted through its almost exclusive reliance on evidence from randomised clinical trials for the determination of treatment and care regimens.[6]

A number of doctors and practitioners have recently claimed that it is the use of limited forms and quality of evidence that is central to the relative failure of the western medical paradigm. Mark Tonelli, building on a concept first put forward by the late Sir Douglas Black, past President of the Royal College of Physicians of London, has recently discussed the potential merits of evidence-free medicine.[7] While the concept may be regarded by some as extreme or lacking in merit, Tonelli usefully points out how existing views of evidence tend to confuse and obfuscate decision-making in clinical practice, so preventing the use of proper reason in the development of the most appropriate clinical decisions for the individual patient.

The fact that most clinical decisions are made during a very limited consultation between practitioner and patient, typically of 5 or 10 minutes duration, and this in the majority of instances results in the prescription of pharmaceutical drugs, is also a key factor affecting the quality of clinical practice and healthcare delivery.[8,9]

Another key constraint to the implementation of healthcare strategies that are effective in reducing largely preventable chronic diseases is the absence of sufficient graduate and postgraduate education in nutritional and lifestyle approaches, despite the general acceptance that these are key factors in the aetiology of these diseases.[2] Even in the USA, where integrative medicine is more widely accepted than in many other parts of the world, nutrition education in medical schools is considered inadequate by public health researchers.[10] Presently, mainstream health professionals, including doctors, nurses and pharmacists, have very limited formal training in either nutritional or lifestyle strategies and healthcare delivery is primarily curative rather than preventative in nature. Since the development of chronic diseases, including cardiovascular disease, cancer, obesity, diabetes and osteoporosis, is dependent to a large extent on nutritional and lifestyle habits exercised during childhood and early adulthood, curative approaches are both relatively ineffective and are certainly uneconomic as compared with preventative strategies applied during the earlier years of life.

Based on the above, there appears to be ample reason to consider a new paradigm in healthcare. The increasing interest in 'East-West' medicine[11] is just one expression of the need for a more holistic approach to healthcare that is also better adapted to the needs of the individual. In recognizing the deficiencies of the western medical paradigm, particularly given its poor track record on disease prevention and its over-reliance on new-to-nature pharmaceuticals, it is appropriate to consider approaches that may facilitate the development of a more tenable and sustainable healthcare paradigm.

In this paper, I evaluate specifically how the principle of sustainability may be applied to the development of a new paradigm in healthcare that functions harmoniously with the human body and natural systems generally.

The evolution of healthcare

For many thousands of years, humans managed their health largely through the use of specific foods, plant and earth-derived products, as well as by using a diverse range of

physical and spiritual practices. The knowledge born out of centuries of successes and failures, of trial and error, was passed down, generation to generation, allowing for continued evolution of the particular healthcare system. Some of these healthcare systems continue to evolve today, having stood the test of time, while many have become extinct. Surviving traditions include Ayurveda, Unani, Tibetan, Traditional Chinese Medicine, and a multitude of diverse healthcare traditions still existent in Japan, South-East Asia, southern Africa, South America and elsewhere. Many of these systems are holistic in nature, and involve consideration of the body as a whole, as well as interactions between the mind and body or mind, body and spirit.

However, their non-mechanistic basis as well as the likely complexity of interactions involved, has made them relatively poorly amenable to evaluation using western scientific tools and EBM. Accordingly, they have been widely rejected by mainstream, western systems of healthcare. Because of this, these traditions are also now more under threat from regulatory authorities than at any other time in their history.

Various elements of these traditions have been incorporated into a large range of modalities, which are commonly positioned under the complementary and alternative medicine (CAM) or integrative medicine umbrella. The modalities include nutritional and phytonutrient therapies, herbal medicine, homeopathy, bioenergy medicine, aromatherapy, meditation, as well as a wide range of massage traditions and manipulative therapies (e.g. osteopathy, chiropractic). Many of the traditional and holistic systems of healthcare involve utilisation of multiple modalities alongside one another, depending on specific patient requirements. Nutritional medicine or therapy, although a comparatively recent development, is often considered as a CAM modality despite nutrition and dietetics being acknowledged branches of orthodox western medicine.

Sustainability of the western medical paradigm

The last two or three decades have seen an unprecedented increase in the use of new-to-nature therapeutic agents (drugs) in an attempt to treat, prevent or cure disease. Americans on average make over 1.1 billion visits to physicians or hospital outpatients departments annually, amounting to an average of around 3.8 visits per person.[12] About 65% of all patient visits to physicians result in drugs being prescribed.[13] Over 3 billion prescriptions are filled each year,[14] averaging around 10 prescriptions for every person in the USA annually. With an average cost of $54.34 per prescription in 2007,[15] the annual cost of these prescriptions is about US$165 billion, the equivalent of $550 for every American each year. Adverse drug reactions (ADRs), which increase exponentially in those taking 4 or more different medications,[16] are now the fourth leading cause of death in the USA,[17] putting them in front of pulmonary disease, diabetes, AIDS, pneumonia, accidents, and motor vehicle deaths.[18]

Again, using data from the USA, if the estimated 98,000 deaths associated with preventable medical and surgical injuries in hospitals,[19] as well as the estimated 90,000 deaths associated with preventable infections in hospitals[20] are added to the estimated 106,000 deaths from ADRs which follow the non-error prescription of medications,[17] orthodox medicine is unequivocally the third leading cause of death in the USA. The situation appears similar in most other western countries.

It has been estimated that in the UK, adverse drug reactions cost the country's National Health Service £2 billion (US$3.3 billion) annually.[21] A recent Swedish study has revealed that 3% of Swedes die from adverse drug reactions, making them the seventh most common cause of death in the country.[22]

Aside from their deleterious effects, a mere 13% of drugs are known to have beneficial effects,[23] while Dr Allen Roses, vice president of genetics for GlaxoSmithKline, the world's second largest pharmaceutical company, admitted in 2003 that: "…the vast majority of drugs - more than 90 per cent - only work in 30 or 50 per cent of the people".[24]

Overall, there is a wealth of evidence to suggest that orthodox or allopathic medicine has had very limited success in dealing with the major disease burdens, namely the chronic diseases. These diseases generally progress exponentially in population groups over 50 years of age.[25]

Finally, western medicine, particularly by comparison with eastern and other traditions, places very little emphasis on the psychological and emotional health of the individual, particularly where physical symptoms are the most obvious presentation. Such avoidance, coupled with the difficulty of affording expensive medications by the socio-economically disadvantaged, means that quality of life (QOL) considerations are to a large extent ignored.

From a total cost-benefit perspective, where financial, environmental, emotional and other short- and long-term costs and benefits are adequately considered, it would be difficult to uphold the western medical model as one that is either efficient or indeed sustainable. The spiralling costs of drugs, the rise in ADRs and increasing patient resistance to using drugs as the primary therapeutic tool further exacerbate the lack of sustainability of pharmaceutical-based healthcare that has come to epitomise the western medical paradigm.

The principle of sustainability

Sustainability has been defined in many different ways, in different contexts. Most definitions refer in one way or another to those approaches that provide the best outcomes for the human and natural environments both now and into the indefinite future. Sustainability relates to the continuity of social, environmental, economic and institutional aspects of human society, as well as to all aspects of the non-human environment.

The word *sustainability* (*Nachhaltigkeit* in German) appears to have been used for the first time in 1712 by the German forester and scientist Hans Carl von Carlowitz in his book *Silvicultura Oeconomica*. Since this time the term has been used extensively in a wide array of different contexts.

In 1995, the World Summit on Social Development defined the term as "the framework for our efforts to achieve a higher quality of life for all people", in which "economic development, social development and environmental protection are interdependent and mutually reinforcing components".[26]

The application of sustainability principles to international development issues, to the energy industry, to forestry and to agriculture, is now familiar to most and widely accepted as a rational development given the competition for limited resources and an ever-

burgeoning global population. In agriculture, 'organic' and 'biodynamic' farming are subsets of sustainable agriculture, although it should be recognised that organic farming principles in particular are already being diluted by pressure from large agri-business interests, as seen in recently issued international guidelines on organically produced foods developed by the Codex Alimentarius Commission.[27] These guidelines are at odds with some of the principles appreciated as early as the mid-twentieth century by a group of British farmers, scientists and nutritionists who recognised the importance of soil health and fertility and the direct connection between farming practice and plant, animal, human and environmental health. This group went on to establish the Soil Association in 1946, a body that has become one of the leading certification bodies for organic food and a major force in triggering the global shift back to more ecologically-based agricultural principles.

Today, however, it is possible for foods to be certified organic, whilst not adhering to the principles of sustainability. Increasing amounts of organic food found in major multiples and supermarkets in western countries, much of it carrying a large number of 'air miles', could hardly be regarded as organic, yet the food meets the certification requirements because the use of pesticides and synthetic fertilizers have been avoided during cultivation or production. Organic farming protagonists, including the Soil Association, are increasingly pushing for a return to sustainability principles based on the development and maintenance of soil fertility and health.

Based on these experiences, it is appropriate to postulate principles and criteria to help define true sustainability, in the broader sense, as applied to healthcare. This is of particular relevance today given the likelihood that corporations with vested interests are likely to pay little more than lip service to any ecologically-based concept that finds population-wide support in the hope that they might exploit any 'wriggle room' left through weaknesses, ambiguity or poor drafting of principles.

Sustainable healthcare: a promising new paradigm?

Mainstream medicine is exploring many routes by which newly evolving disciplines such as molecular techniques, biotechnology and genomics can be used to provide solutions in healthcare while at the same time generating substantial new intellectual property and profits for the providers of the technology. One major constraint to such developments in modern medicine is their mechanistic nature and the intrinsic reductionism, linearity and limited view on causality that spawns their emergence. Most modern medicine interventions avoid consideration of the whole organism (body), and its interaction with other humans and others aspects of the environment. A sustainable approach would by definition involve evaluating the whole and individual body, in the context of its specific environment.

While whole body medicine has been practiced outside the West for centuries, it has entered a western context primarily via the fringes of mainstream medicine, and particularly within the areas that are popularly referred to as 'complementary and/or alternative medicine' (CAM) and 'integrative medicine'. These terms are in themselves relatively vague and it is no surprise that they have become subject to misinterpretation, misrepresentation and abuse. There is a widespread rejection of CAM modalities in many orthodox western medical environments, the lack of proven efficacy and safety being nearly always used as the

primary justification. The term 'complementary medicine' in particular also suggests that modalities befitting this categorisation should be practiced as an adjunct to allopathic medicine. This obviously need not be the case if effective, economically and environmentally viable healthcare is to be practised.

One of the biggest constraints of allopathic medicine is the over-use of new-to-nature molecules as therapeutic agents. 'Natural healthcare' is a term that is sometimes used to refer to healthcare interventions using natural products or to those approaches that operate harmoniously with the human body and with the environment. But it does not necessarily mean that such approaches are sustainable. If for example a company ravages a rainforest in order to harvest a rare herb that has therapeutic properties, use of the herb in healthcare would be regarded as natural, but it is at the same time far from sustainable.

We have previously[28] defined 'sustainable healthcare' as follows:

> *A complex system of interacting approaches to the restoration, management and optimisation of human health that have an ecological base, that are environmentally, economically and socially viable indefinitely, that work harmoniously both with the human body and the non-human environment, and which do not result in unfair or disproportionate impacts on any significant contributory element of the healthcare system.*

Just as the notion of 'sustainable agriculture' provides the overriding principles that are embodied by 'organic' or 'biodynamic' farming', and 'sustainable energy' does similar for solar, wind or other renewable forms of energy, the concept of 'sustainable healthcare' may be developed as a framework for inclusion of healthcare modalities, strategies and interventions that are to be deemed as sustainable. In this way, the term 'sustainable healthcare' would in no way replace existing terminologies for modalities for interventions. For example, specific practices that are currently considered under the banners of 'functional'[29], 'nutritional and environmental' or 'ecological medicine'[30], would be highly likely to meet the criteria required for sustainability.

Following are some of the key criteria and factors that are proposed as a means of achieving sustainability in healthcare:

Quality of Life evaluation

One of the major challenges in evaluating the costs and benefits of a particular regimen or strategy in healthcare, is the attribution, for the sake of comparison, of a common currency that relates to both cost (risk) and benefit. The use of 'quality-adjusted life years' (QALYs) and 'disability-adjusted life years' (DALYs) are emerging as among the most robust approaches to the evaluation of healthcare interventions.[31] Such evaluations should be applied to a diverse range of healthcare strategies as a matter of urgency, including non-drug, nutritional, and lifestyle approaches, to allow their direct comparison with conventional, drug-based interventions. Of particular importance is the evaluation of disease prevention strategies which prioritise ecologically-based lifestyle approaches including healthy eating (including minimal consumption of processed foods and food additives), reduced environmental chemical and harmful microwave and low-frequency

electromagnetic radiation exposure, physical exercise and relaxation. Such evaluations need to be undertaken within a diverse range of socio-economic groupings.

Genomics in sustainable healthcare

Today, in the fields of genomics and epigenomics, we see the rapid development of a branch of science that evaluates the genetic and environmental elements that interact to make us fully human. While the Human Genome Project had revealed by 2003 the structure of the code that defines human life, we still know very little about the meaning of the code, and just how the genome of each individual interacts with the world around us. Understanding the inner workings of the genome is likely to take us beyond existing concepts of EBM, allowing us to see the human as more than just a highly complex machine.[32] Many have thus far seen the rapidly expanding science of genomics primarily as a vehicle to facilitate tailored drug development (pharmacogenetics) for cancer, heart disease and other chronic diseases. However, it is likely that further elucidation of the genome's complex interactions with the natural environment, including with foods and nutrients with which our evolution has been intimately involved for millennia, will in time bring further credence and popularity to more sustainable nutrient and natural product based preventative and curative healthcare strategies.

Health monitoring

Any sustainable healthcare system is likely to require that markers for health and wellbeing are monitored regularly. A wide variety of functional tests are already available and are used routinely by practitioners of functional and ecological medicine, [33] but such diagnostic tests are rarely used by conventionally-trained doctors and health practitioners given that disease prevention or early diagnosis of pre-clinical conditions is in the main not currently prioritised.

Personal responsibility, engagement, equality and incentive

Western healthcare provides little incentive for personal engagement, despite recognition that engagement by the individual is key to a properly functioning healthcare, rather than disease management, system.[34,35] Unhealthy lifestyles and diets are commonplace, and the existing medical paradigm presently dictates that it is usually only when a disease or disorder presents itself that professional support is sought. In the dominant allopathic model, the patient typically takes little responsibility for his or her health, other than following the advice of the medical doctor to which responsibility has been delegated. In the majority of consultations with doctors, one or more medications are prescribed (see above). In any sustainable system, individual engagement and responsibility is essential. The healthcare system needs to be structured as far as possible to avoid inequalities created by such factors as socio-economic circumstances, early life experiences, geography and ethnicity. Methods of incentivising individual responsibility could be devised, such as by the provision of insurance schemes that offered no claims bonuses for those who have maintained their health and wellbeing, within the limits of their genetic potential, through healthy living. An analogous system is, after all, almost universally used by insurers of motor vehicles, which provides the incentive to avoid making claims.

Whole body healthcare

Any sustainable system needs to abide by ecological principles, yet these cannot be applied if the body is viewed, as is currently the case from the perspective of the existing western medical paradigm, as a construct of individual sub-units or compartments which work together in a manner that is little different from a highly complex machine. While Eastern and other traditions have always tended to abide by whole body and holistic principles, these approaches have been accepted mainly within the CAM world and have yet to receive sufficient acceptance by the mainstream medical community. The continued evolution of inter-disciplinary and multi-disciplinary medicine is likely to modify this view in due course. The recent development of psychoneuroendocrinology, which now has a dedicated journal in its name, is an expression of this, as is the increasing interest in Chinese and Ayurvedic medical systems among mainstream medical universities in the West.

Environmental sustainability

Any sustainable healthcare system must be friendly to the biotic and abiotic environment within which it exists, both locally and further afield. Presently, the seriousness and extensive nature of ADRs on humans, the pollution of waterways by pharmaceuticals and the pillaging of indigenous knowledge and products from rainforests and other natural environments[36] are just some examples that are indicative that sustainability of the existing, dominant paradigm is a far cry. There are also significant concerns as to the environmental sustainability of supply of some herbs, fish and krill oils and other natural products supplied by the natural products industry. The wider use of validated sustainability certification marks will undoubtedly help to drive demand away from unsustainable sources of natural products. More balanced and ecologically-based cost/benefit systems of evaluation are urgently required to better evaluate the true cost of any given healthcare intervention or regimen, as well as helping in the selection of more appropriate ones.

Education and training

A radical redevelopment of curricula for healthcare professionals is required, especially in the case of medical doctors, nurses and pharmacists. In addition, because of the need in any sustainable model to emphasise prevention, especially in the young, additional training of specific healthcare professionals would be required. These would need to be specialised particularly in the field of wellbeing management, where primary tools would involve nutrition and diet, exercise, relaxation and other aspects of lifestyle.

Healthcare facilities

Presently most healthcare facilities are designed as places for the treatment or management of disease. In a sustainable healthcare system, although hospitals, clinics and other disease treatment centres would still be required, healthcare facilities with a specific focus on health monitoring and nutritional and lifestyle education, perhaps better described as ‘wellness centres’, would also be needed to ensure effective and long-term adherence to healthy living approaches.

Conclusion

Sustainability is a robust concept that has proven its worth across a range of different industries including energy, agriculture, forestry and even construction and tourism.

Sustainable healthcare provides a potentially powerful handle with which to help stimulate the much needed sea change in healthcare. Those governments that have been very receptive to the principles of sustainability, as they relate to other industries, are likely to find the use of sustainability criteria of assistance in weighing up the risks and benefits of different healthcare approaches.

Contemporary healthcare in western countries is presently dominated by use of pharmaceutical drugs, and many available indicators suggest that drugs have had a limited effect in dealing with some of the greatest scourges facing human health, including chronic diseases, psychiatric diseases and even certain infectious diseases. From a cost/benefit perspective, pharmaceutical-based approaches do not fare favourably and a sea change is required if mainstream western healthcare is to deal with the ever increasing burden on the healthcare system, particularly given an ageing population.

The dichotomy between CAM and the dominant western, allopathic model has led to increased vilification of protagonists of each approach. The use of limited scientific and 'evidence-based' methods of evaluation that do not lend themselves well to the more holistic CAM approaches, has meant that the 'medical establishment' has been able to increasingly marginalise CAM. This has occurred while the establishment has provided no significant improvement in its offering to the majority of the population that seems forced to accept, without adequate justification, pharmaceutical-based medicine as the most effective and scientifically-validated form of medicine. Additionally, CAM delivery, in the West, is largely funded privately by the individual while State support is not uncommon for orthodox medicine; such discrepancies unfairly disadvantage individuals in less advantaged socio-economic groups who may struggle to afford CAM or other non-conventional approaches.

Encouraging a paradigm shift that requires all forms of healthcare to be bound by principles of sustainability is one of the surest means of providing a level playing field for all healthcare modalities. The adoption of sustainable healthcare will greatly encourage preventative approaches to healthcare, those that are based on nutrition and lifestyle changes, and those that are intrinsically compatible with biological systems, both within and outside of the human body.

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