

Globalization of Traditional Chinese Medicine: what are the issues for ensuring evidence-based diagnosis and therapy?

Introduction

The International Classification of Diseases (ICD) coding tool of the World Health Organization is an influential and essential part of disease diagnosis. The recently proposed revision, ICD-11, brings some important reforms for medical practice, for example for the classification of mental health disorders [1]. However, for many clinicians and scientists, the revision of ICD-11 also brings a major problem in that it adds a chapter on Traditional Chinese Medicine (TCM).

In this Commentary, the European Academies' Science Advisory Council (EASAC) and the Federation of European Academies of Medicine (FEAM) add their voices to those who have expressed scepticism and concern that the ICD-11 reclassification includes diagnostic approaches that are not yet, and may never be, adequately validated according to established scientific and regulatory criteria. EASAC and FEAM are formed respectively by the national science academies and national medical academies of the EU Member States to enable them to collaborate as collective voices of science and medicine in giving advice to policy-makers. Further detail on the scope and procedures of this EASAC-FEAM work has been published in a recent Statement [2].

What is Traditional Chinese Medicine?

Traditional Chinese Medicine has a long history, and it covers a diverse range of practices that can only be regarded together as a group in philosophical, ethnological or geographical terms. One of the fundamental principles of TCM is that vital energy, qi, circulates through body channels connected to organs and functions. Its diagnostic approaches are subjective and patient-based: signs and symptoms are gathered primarily through inquiry, observation and minimal physical examination to interpret a diagnostic problem. TCM practitioners often disagree on the diagnosis. In therapy, TCM employs various mind and body practices, including acupuncture, tai chi, herbal products, skin cupping and moxibustion, and, again, TCM practitioners may disagree on what treatment is

deemed appropriate for a particular patient. Concepts of body and disease used in TCM have not been substantiated by conventional scientific investigation. This lack of a robust science base means that TCM mechanisms are often neither verifiable nor falsifiable by conventional scientific inquiry. TCM is a major part of health services in some Asian countries but, although there has been some convergence in practices, there is no agreed international standard to enable collection of comparable data between countries and no common standard for testing efficacy of interventions or monitoring safety.

Outside of Asia, approximately 20% of Americans used Chinese herbal products during the previous 12 months [3]; the data from social surveys across Europe [4] indicate a probable lower usage in most European countries, about 5% of the population using herbal treatments (not necessarily Chinese) and 4% acupuncture (out of a total 26% usage of complementary and alternative medicine in the study population).

What are the concerns about TCM inclusion in ICD-11?

Because countries have previously varied in their methods for implementing TCM in their health services, it might be imagined that efforts to investigate and standardize TCM diagnosis should be welcomed. However, there is a great risk that the inclusion of TCM within the coding of ICD-11 will lead some to regard it as a legitimization of what are, in reality, still unvalidated methods and unfounded claims [5]. In the current absence of agreement on the principles or a shared commitment to established methods of scientific inquiry, it would seem premature to try to include TCM or any other forms of complementary and alternative medicine within a unifying diagnostic classification and it may actually be contrary to the scientific basis on which ICD has been built.

There is a risk of misleading patients and health professionals and of increasing pressures for reimbursement of TCM by health systems and insurers at a time of limited resources. We emphasize that we support the broader objective of the WHO and

others who, in seeking to ensure access for all to health care, argue for rationalization of the diverse approaches used in different medical systems. In particular, we welcome efforts to facilitate the scrutiny of TCM and other complementary and alternative medicines according to evidence-based procedures. We regard it as natural and fair to demand the same rigorous assessment of TCM therapeutic products and procedures as for innovative medicines and other evidence-based treatments (from state-of-the-art clinical trials) developed and regulated worldwide. We also accept that the WHO has tried to make clear that their chapter in ICD-11 on TCM does not endorse any specific form of treatment [1]. Nonetheless, because of the perceived encouragement to TCM created by inclusion of it as a system of medicine in ICD-11, the qualification may be misconstrued or ignored. A lack of comparability in the evidence base for the range of procedures now encompassed within ICD-11 also risks increasing uncertainty by undermining confidence in evidence-based medicine.

What might be the consequences of globalizing TCM? First, patients may be encouraged to seek diagnosis according to TCM precepts through public health services, thereby causing additional pressures on those services. Secondly, patients may seek unregulated diagnosis outside of the remit or responsibility of public health services. In both cases, there is risk of public and patient confusion and of delaying access to evidence-based medical care. Thirdly, the introduction of TCM into international diagnostic classification has implications not just for diagnostic revision but also for contingent therapeutic approaches.

What are the issues for therapy?

We are aware, of course, that there are examples where traditional medicine, Chinese or other, has been subjected to thorough preclinical investigation and proven in rigorous clinical trials to make a major contribution in delivering health benefits. Artemisinin therapy for malaria is a great example, but the success of artemisinin as an anti-malaria agent is attributable to a lengthy Chinese commitment to robust discovery research, including pharmacognosy and medicinal chemistry [6]. The history of pharmacology testifies to the value of many other natural products as the basis of modern medicine. But this does not mean that claims can ever be accepted uncritically or that different standards of assessment and verification

should be employed according to their philosophical or geographical origins. The history of medicine discloses numerous products and procedures that were used in folk and traditional medicine, sometimes widely and for long periods of time, but were found to lack effect beyond placebo once subjected to standard clinical trials.

We illustrate our concerns by focusing briefly on two of the most popular TCM practices. First, the lack of demonstrable objective and replicable evidence for efficacy of many Chinese herbal medicines is a major worry. It is noteworthy that, for example, in the EU regulatory authority registration of traditional herbal medicines does not require demonstration of significant efficacy. There may also be serious safety concerns. Multiple risks of harm from herbal ingredients have been documented [e.g. Refs [7, 8]] and, in the absence of approved standardized frameworks for quality assessment and formulation, additional health risks may be caused by adulteration and dose variation [9]. Furthermore, pharmacological or pharmacokinetic interactions with other medications constitute potential threats to the patient. Follow-up surveillance and procedures for assessing liability outside of public health services may be weak or absent. There is a very large scientific literature on TCM herbal medicines, but clinical studies often fail to meet standard methodological criteria, and high-quality evidence is often lacking, for example as concluded from a systematic review of the literature on rheumatoid arthritis [10]. There is much to be done to adopt international standards to clarify therapeutic potentials and mechanisms of action, in upgrading quality control and in building big data platforms to share information [11].

Secondly, acupuncture was evaluated some 13 years ago in an article in this journal that found heterogeneity in clinical trials and systematic reviews [12], and concluded that many clinical effects depend on a placebo response. How much has changed since then in the acupuncture evidence base? There is an extensive database on publications assessing the evidence for various clinical indications, particularly in the Cochrane collaboration, but it would be fair to say that, in many countries, the use of acupuncture remains controversial, for example in pain relief [13]. It is also noteworthy that, contrary to common assumptions, acupuncture is not necessarily harmless [14]. In exploring and describing the effects of

acupuncture, there is need for rigorous investigation and clear terminology [15]. There are complexities in ensuring appropriate placebo controls and in interpreting effects [16–18], but numerous acupuncture studies that have included subjects that received either sham acupuncture (where needles are placed outside of the traditional acupuncture points) or double-blind needles (that did not penetrate the skin) have led to a conclusion that penetrating needles do not exceed the placebo effect. Furthermore, neither energy meridians nor acupuncture points have a biological substrate.

Recommendations

We have expressed concern previously [19], in the context of homeopathy claims, about problems caused by lack of robust evidence provision for quality, safety and efficacy, and lack of standardized regulatory requirements applicable to all medicines. Following the principles we espoused in that assessment, we now make the following recommendations for TCM and its globalization.

Diagnosis

Diagnostic procedures should be based on credible science and use validated diagnostic instruments to provide objective, reliable, reproducible assessment and to reduce inter-rater variability. Whatever the diagnostic approach utilized, practitioners should be appropriately trained and audited by professional bodies. We urge the WHO to re-examine how best it can support vigorous exploration of the issues for reforming its diagnostic coding tool to avoid premature and indiscriminate acceptance of insufficiently validated approaches.

Regulation of therapeutic approaches

There should be consistent standards of proof required to make clinical claims for all products and practices in human (and veterinary) medicine [20] and consistent professional standards for practitioners. There must be objective and verifiable evidence, commensurate with the nature of the claims being made. In the absence of such evidence, a product should be neither approvable nor registrable by national regulatory agencies for the designation medicinal product or medical device. The value of continuing with simpler regulatory approval categories by some authorities, appertaining to ‘traditional’ medicines, should be re-examined by regulatory agencies and legislators.

Reimbursement

Evidence-based public health systems and medical insurance systems should not reimburse products and practices unless they are demonstrated to be efficacious and safe by rigorous premarketing testing.

Standards in labelling and marketing

Because the reform of regulatory frameworks and public health systems can take significant time, even if started now, there should also be consistency in the over-the-counter (OTC) consumer standards applied to labelling of product composition, and advertising and marketing. For example, for herbal products there should be accurate, clear, verifiable and simple description of the ingredients present in the formulation. Diagnostic and therapeutic procedures should be clearly explained in patient information literature. Promotional claims for efficacy, safety and quality must conform to established standards of accuracy and clarity.

EASAC and FEAM emphasize the importance of informed patient and consumer choice as a central feature of our recommendations, addressed both to the WHO and to national and regional regulatory authorities and policymakers. We aim to continue raising the visibility of these and related issues through our regional academy network activities and, at a country level, through our national academies. We also recognize the great importance of extending analysis and debate globally. Research and innovation must be at the heart of medicine. Currently, the medical and scientific communities worldwide are actively addressing the sustainable development goals (SDGs). We conclude that a robust and coherent evidence base that is applicable throughout health care is centrally important in progressing access by all to the health-related SDG targets.

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Conflict of interest statement

The authors declare no conflict of interest.

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