Separating good science from folklore in traditional Chinese medicine

By Gemma Calvert and Yeh Mingmin

THE sale of products derived from endangered species such as powdered rhino horn is outlawed in China. Yet, these animals are still poached and sold for human consumption in the belief that, according to traditional Chinese medicine (TCM), they can relieve a wide range of ailments and diseases.

TCM remedies have led to the development of drugs that have saved millions of lives. In 2015, Chinese scientist Tu Youyou was awarded the Nobel Prize in Medicine for developing the hugely successful anti-malaria drug artemisinin from the traditional fever remedy, sweet wormwood.

TCM is split into two factions: black market dealers on one side and state-regulated, modern TCM companies on the other. However, this separation is only part of the modernisation process for TCM. The legitimate side of the industry still has problems that prevent more widespread acceptance: Diagnosis and treatments are often inconsistent, and there is a lack of scientific proof for almost all treatments.

However, the answer to these problems could now be at hand. Big Data, analytics, smart devices and artificial intelligence are part of a digital revolution that can propel traditional chinese medicine into the 21st century.

The digital revolution

No diagnostic tools are used to asses TCM patients; practitioners rely on inspection, olfaction, inquiry and pulse taking. This means treatments for the same illness often vary at different clinics.

It takes practitioners many years to develop the skill to analyse the human organ and recognise the subtle indicators that point to underlying problems. A smartphone diagnostic app would mean that practitioners could photograph patients' tongues, for example, input other symptoms, and then allow the software to compare the image to a database using image recognition technology. In addition, an integrated wrist device can be accompanied with the app to measure one's pulse to identify the root of the discomfort or illness. The information would then be automatically synchronised to the diagnostic app, with the recommended Chinese herbal medicine on the side.

Diagnosis and treatment could then be standardised by comparing the data to previous patients with the same issues and presenting the remedies that were successful. Users could further be educated on the features of the medication; for instance, information on the functions of the herbs or the common combinations of the herbal treatments. Showing some examples of illegal sources of medication such as the rhino horn or the bear claw would also serve as a learning platform to the consumers, and would further raise the awareness of preservation.

This app could be used in conjunction with cloud-based computing and artificial intelligence to store and analyse patient data and identify the specific herb blends that warrant further clinical study.

Digital systems that perform a similar function are already being developed to aid Western medicine. In the UK, DeepMind, a subsidiary of Google focusing on artificial intelligence, is working with the National Health Service to develop software that will analyse the medical data of over 1.5 million patients so that it can predict kidney failure and alert doctors.

The TCM industry should seize the opportunity to create a system that allows both patients and practitioners to submit the full range of tracking data possible, including when patients feel pain, when they feel better, photos of their ailments, other trackable or self-logged data such as diet, sleep and exercise, as well as demographics and medical history. This would help TCM practitioners to work more closely with their patients, getting real time updates on their conditions and adjusting dosages remotely.

Accepting new technology

A major challenge for the adoption of digital data capture is the potential resistance of TCM practitioners to adopt new technologies or share their techniques with other less experienced practitioners. Patients too may be reluctant to allow the use of modern technology for traditional treatments – after all, part of TCM's success in Asia is due to its link with the past.

But TCM must look forward. There is a new generation of practitioners performing in modern clinic-style premises servicing young and progressive patients. It is here – treating those brought up with digital technology – where the TCM digital revolution can really gain traction.

Integration with traditional clinics may be difficult, but to bring TCM up to date and aid its integration with Western medicine in Asia, practitioners may need to accept this progression. If there is evidence that practitioners using the system can improve performance and profits, then access to the diagnostic platform and its tools could help to win over those who initially resist.

This kind of platform could be introduced by a single international TCM company in Asia, such as China's manufacturing and retail giant Tongrentang, or a conglomerate, such as the China Medicinal Materials Group, formed by a number of leading Chinese manufacturers, distributors and innovators of TCM to have an industrial giant competing on the global market. Then it could be used as a tool for the company to improve logistical efficiency, maximise use of its products, and to help practitioners develop treatments.

The future for TCM

Increasingly, modern businesses rely on technology and data. We have only just begun to see the possibilities and benefits of health tracking and data analysis in medicine. In a few decades, when it is predicted that personalised health tracking will be commonplace, TCM could find a prominent position in the spectrum of medical treatment. As advancements such as DNA analysis and instant 3D-printed personalised medication takes Western medicine away from one-size-fits-all treatments, the individualised holistic approach of TCM – supported by proof – could become more acceptable in modern medicine.

This digital revolution could help a new modern Chinese medicine break free from TCM, completely separating the science from the folklore, and leaving behind controversial remedies such as powdered rhino horn in the wake of cold hard data.

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