

## Methodological Aspects of Traditional Chinese Medicine (TCM)

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### Abstract

**The efficacy of Traditional Chinese Medicine (TCM) is less well-established than many believe and needs to be more firmly established through clinical trials. Such studies should adhere to the currently accepted standards. When planning and conducting clinical trials, one encounters numerous logistical and methodological problems. The most important logistical obstacle is a lack of funds while the most important methodological issue is to transparently minimise bias. Despite these formidable problems, clinical trials of TCM are usually feasible and certainly necessary for testing the efficacy of TCM.**

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**Key words:** Acupuncture, Clinical trial, Herbal medicine

### Introduction

Traditional Chinese Medicine (TCM) has a long history but its efficacy is not as well-documented as one would hope. Proof of efficacy has to come from clinical trials, i.e., prospective experiments for assessing the results of medical interventions. Generally speaking, the design and reporting of clinical trials of TCM should follow the same guidelines as those for any other such experiment.<sup>1</sup> In particular, they must provide clear definitions or descriptions of:

- Research questions/hypothesis,
- Participants and sample size,
- Interventions,
- Outcome measurements,
- Randomisation procedures,
- Blinding, and
- Statistical analysis.

### General Considerations

There are, of course, many differences between TCM and conventional medicine. One significant logistical problem in relation to clinical trials of TCM is the lack of funds for such research in Western countries. For instance, there is little patent protection for medicinal plants and manufacturers of Chinese herbal medicines are usually relatively small (and therefore not financially potent) companies. A lack of funds leads to a paucity of research and the problem that studies are often not as rigorous as they could be. The effect is aggravated by a relative lack of

research culture and scientific expertise in TCM. The effects of TCM are usually mild and take a relatively long time to manifest clinically.<sup>2</sup> This means that trials must be larger and longer than studies of conventional medicine – a fact which can significantly complicate the existing logistical problems with trials of TCM. In the US, the National Institutes of Health (NIH) now support large clinical trials of traditional medicines. Other countries are far less fortunate, and globally, such investigations remain under-funded.

### Specific Considerations

In addition to these general difficulties, clinical trials of TCM encounter a range of problems that are not unique to TCM but, in terms of their size, represent more specific obstacles to research.

*Bias* can, of course, be an issue in any research, but it is probably larger in TCM than elsewhere. We have shown that clinical trials of TCM tend to be of low methodological quality, which renders them prone to bias.<sup>3</sup> This does, of course, not prove the existence of bias but seems to suggest it. Similarly, complementary medicine journals likely to publish articles on TCM are associated with a strong positive publication bias.<sup>4</sup> The concern therefore is that, due to a range of factors, bias is more of an issue in TCM than in conventional medicine.

*Outcome measures* used in clinical trials should, of course, be validated. In trials of TCM, soft and non-

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validated outcome measures are often employed, e.g., percentage of patients perceiving benefit or patients' preference. Similarly, multiple outcomes are frequently used without adequately accounting for multiple statistical tests. Finally, surrogate endpoints are frequent and researchers often seem to measure what is measurable rather than what is relevant.

*Blinding* can be a real problem in “double-blind” trials of TCM. Due to taste, odour or appearance, verum herbal medicines may be distinguishable from their respective placebos. Unblinding can therefore be a problem and exert an undue influence on the results. For instance, there are numerous “placebo-controlled, double-blind” trials of garlic preparations for cholesterol lowering.<sup>5</sup> But anyone who has ever been involved in such a study knows that, due to the body odour caused by garlic, blinding is not a realistic option. For clinical studies of acupuncture, blinding is, of course, a significant problem. Recent, non-penetrating sham-devices<sup>6</sup> are probably a step forward but the blinding of the acupuncturist is usually not an option.

*The intervention* has to be fully described in all clinical trials. The aim must be to disclose all details such that the study can be reproduced by other investigators. In Chinese herbal medicine, things can be more complex than in conventional studies. Herbal medicines are natural products; their composition and therefore effects could depend on a range of factors, e.g.:

- Source(s), e.g., soil, climate
- Processing/extraction, and
- Storage.

A degree of variability from batch to batch may be unavoidable in herbal medicines. Additional issues can be adulteration,<sup>7</sup> and end contamination, e.g., with heavy metals.<sup>8</sup>

An often-voiced criticism of clinical trials is that such experiments tell us little about individual patients. In TCM, treatments are often highly individualised. Therefore, some proponents dismiss the value of clinical trials of TCM. This obviously ignores the existence of  $n = 1$  studies. Such studies are possible in herbal medicine and they inform us about the responses of individual patients.<sup>9</sup> Similarly, modifications of the standard design of clinical trials have

been developed,<sup>10</sup> some of which may be suitable for specific research questions encountered in TCM.

## Conclusion

Clinical trials of TCM are undoubtedly feasible. They should adhere to the standards applied to any other clinical trial (Table 1). The problems they face can be significant but, in principle, most can be solved.

Table 1. Advice on Designing Clinical Studies of TCM

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- Do not re-invent the wheel
  - Secure (independent) funding
  - Make sure you have all the essential expertise “on board”, e.g.:
    - expert in TCM
    - clinical expert
    - statistician
    - methodologist
  - Formulate a clear research question/hypothesis
  - Take all steps to minimise bias and maximise reproducibility
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