Issues in clinical trials in complementary and alternative medicine (CAM)

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Current Comments are a rapid outlet for scientific opinions on a topic of general interest.

Ayurveda is a system of complementary and alternative medicine which originated more than 3500 years ago and is practiced widely in India and Sri Lanka. In Sri Lanka, CAM medicine is dominated by practitioners who practice both Ayurveda and Deshiya Chikithsa; an indigenous system of medicine unique to Sri Lanka [7].

Contrary to the common belief that its pharmacopeia was developed by trial and error over a period of time, Ayurveda is based on a sound philosophical and logical basis. Although not immediately lucid to those trained in conventional science, knowledge of the fundamentals of Ayurveda is required to understand how the system works in the human body. When clinical trials are planned in disciplines such as Ayurveda it is important for the researcher to understand the incommensurability of theories of Ayurveda and western medicine. Not appreciating this will lead to planning studies in conventional formats which are incompatible with principles of Ayurveda. This has already contributed to a poor evidence base in Ayurveda contrary to widely held perceptions of its efficacy [7]. Some of the reasons why a different approach to clinical research and trials is needed when investigating Ayurvedic medicine as compared to conventional medical research are given below.

In Ayurveda, approach to treatment, understanding and determining the prakurthi or temperament (constitution) of the patient is a prerequisite to starting treatment. Ayurveda treatment will vary depending on the patient's temperament. Prakurthi of a patient is a composite outcome of vata, pitta and kapha (these are the three balancing forces or doshas in the body) states of the body. These balancing forces will depend on the patients' general prakurthi at birth as well as subsequent effects caused by patients' behavior and interactions with the external environment [1].

According to Ayurveda it is important to understand whether the disease is in ama or nirama state as the treatment may vary depending on it. For example, applying herbal oil could be used as a treatment in osteoarthritis in nirama state but would worsen the disease if applied in ama state. It is difficult to explain what ama and nirama are in conventional medical terms. However ama state could be considered as an acute inflammatory state and nirama as disease in remission [2].

A disease could have subvariants according to their etiology and association with predominant dosha. In hemorrhoids or arshas there are different forms

☆ Current Comments contain the personal views of the authors who, as experts, reflect on the direction of future research in their field.

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such as sahaja (congenital) and janmottaraja (arising after birth). Janmottaraja is further subdivided into vathaja, piththaja, kapaja, thridosaja and asra (blood) [3]. Treatment varies depending on different subcategories. Identification of a distinct genomic and metabolomic profile of rheumatoid arthritis classified according the Chinese medical system points to the possible validity of these Ayurvedic classifications [4].

In conventional research methodology the participants are selected according to standard diagnostic criteria for RCT. However these participants are not suitable for uniform intervention according to the principles of Ayurveda, since Ayurvedic treatment will widely differ according to prakurthi, ama-nirama and the doshaja state. Similarly the pharmacogenomic approach also targets patients according to their genotypes and RCTs have struggled to keep pace with this [5].

Ayurveda also deals with diseases in a holistic approach. It will not only prescribe a medicine (aushada) but also will advocate on certain behaviors (viharana) and dietary regimes (ahara). These interventions will also be adjusted according to age, mental state (satva, rajas and thamas — three states of mind), the season (climate and other environmental factors), *etc*. Usually Ayurvedic approach to treatment can be divided into two broader segments. They are shodhana (purificatory or conditioning) and shamana (restorative) treatment. In RCTs both components should be used in interventions. Otherwise the desired outcome cannot be achieved. Shodhana includes procedures of panchakarma such as nasya (nasal instillation of oils), vamana (emesis), virechana (purgatives), rakthamokshana (blood letting), and vasthi (enema) [1]. Obviously panchakarma is immensely difficult to conceal in RCTs.

Furthermore, the taste and smell of Ayurvedic drugs makes it difficult to produce placebos. According to Ayurveda, taste (rasa) will have a particular effect on the body, which will contribute to healing. Hence the same taste (rasa) in the placebo could also bring a similar effect to a certain extent. Hence use of placebos and blinding are incompatible with research that is planned in accordance with fundamentals of Ayurvedic approach.

The assessment of outcomes also needs to be tailor-made to suit the fundamentals of Ayurveda. Ayurvedic treatment sometimes aims to achieve a balanced state of doshas. Such factors will have to be assessed in the outcome of RCTs in addition to the conventional outcomes.

Ayurvedic treatment changes according to the disease state and factors such as climate among many other things. This dynamic therapeutic approach also needs to be considered when planning the intervention arm of RCTs. Therefore conventional study designs may be inappropriate while performing clinical research in CAM. 'In such circumstances, the choice of study design should be discussed on a case-by-case basis' with experts in fundamentals of CAM systems [6]. Methodologies such as single case design, black box design, and open label design, ethnographic and observational studies may be more appropriate for clinical research in Ayurveda [6].

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