



Tertiary education institutions should not offer pseudoscientific medical courses

Standing up for science

The international scientific credibility of Australian tertiary education institutions is being undermined by the increasing number of pseudoscientific health courses that they offer (Box).^{1,2} Many universities teach therapies without a scientific basis to their students within their health care curricula, including homeopathy, iridology, reflexology, kinesiology, healing touch therapy, aromatherapy and “energy medicine”. Subjects such as acupuncture and chiropractic are claimed to treat a broad array of afflictions and are taught as such. The levels of evidence supporting these alternative beliefs are weak at best, and such randomised controlled trials of these therapies as exist mostly do not support their efficacy (with the exception of acupuncture for some types of pain).³⁻⁵ Some university courses purport to teach critical thinking about these approaches and promote research into them. Both are appropriate objectives if they are not a subterfuge for awarding qualifications to practise these therapies.

There is unease concerning chiropractors extending their role in the health system beyond the treatment of musculoskeletal problems related to the back — the least controversial aspect of chiropractic. Many conservative chiropractors confine their practice to this area, but some self-regulated chiropractors’ associations have a more extreme vision that chiropractic should become the major primary care discipline in the country.⁶ Belief that chiropractic can offer all-embracing primary care stems from its founders’ concept of “innate intelligence”.⁷ This supposedly flows as energy up and down the spinal column, controlling the normal function of the body’s physiological processes. Invisible subluxations (non-visualisable disturbances of spinal column integrity) are claimed by some but not all to interfere with this vital flow and to be responsible for a myriad medical problems.⁷

Alarming, some chiropractors now extend their manipulation of the spine to children, making claims that this can cure asthma, allergies, bedwetting, attention deficit hyperactivity disorder, colic, fever and numerous other problems, and serve as a substitute for vaccination.⁸ A number of chiropractors do not support these notions, and we respect those who distance themselves from such unproven beliefs. However, the federal government’s development of a national registration system for chiropractors without definition of an acceptable range of services, together with permission to call themselves doctors, have enhanced chiropractors’ credibility.

Pseudoscientific courses sully the genuinely scientific courses and research conducted at the same institutions. Their scientists and students should be concerned by any retreat from the primacy of an experimental, evidence-

based approach in science and medicine. Academics at these institutions need to stand up for science. Anatomists cannot be asked to support the validity of the meridian channels of acupuncture, pharmacologists cannot advocate, without evidence of efficacy, the use of herbal and homeopathic medicines to naturopaths, and physiologists cannot be asked to explain mythical subluxation theory to chiropractic students.

Federal funding is wasted in supporting pseudoscience through expenditure on campuses that offer such courses, if they directly or indirectly encourage the use of unproven therapies, and through subsidies for rebates that private insurers provide for these treatments. As the number of alternative practitioners graduating from tertiary education institutions increases, further health care resources are wasted, while the potential for harm increases because of delays in effective treatment, side effects, drug interactions, health misinformation and distrust of conventional medicine. Alternative practitioners often entwine empathy and sensible lifestyle advice with pseudoscientific therapies. There is a need for all health practitioners to show empathy, and to advocate a healthy lifestyle, but also a need for them to practise evidence-based medicine. Many conventional therapies carry risks that science needs to minimise, and many also require a better evidence base. However, in general, their mechanism of action has biological plausibility, which is often lacking in alternative therapies.

The recent increase in university-based alternative therapy courses has catalysed the creation of the Friends of Science in Medicine (FSM), which is dedicated to countering the growth of pseudoscience in medicine. Within 1 month, more than 460 prominent scientists, clinicians, academics, consumer advocates and organisations have joined FSM — an indication of the growing disquiet concerning this trend.

FSM has written to all Australian universities about its concerns, asking them to review the scientific basis of their courses. Similar academic concerns have been expressed in the United States (www.scienceinmedicine.org) and the United Kingdom (www.senseabout-science.org), where parallel associations exist and some government-funded university courses have now ceased.^{9,10} All Australian tertiary institutions need to acknowledge this controversy and review their health science teaching to ensure that primacy is given to scientific principles based on experimental evidence. Some will argue that it is better to teach alternative therapies in an academic institution where academic influences may improve critical scientific thinking about these therapies. However, this requires universities to set

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Complementary and alternative medicine courses, units and clinics at Australian tertiary education institutions*

Institution	Course
Australian Catholic University	Introduction to Complementary Nursing Therapy
Charles Sturt University	Bachelor of Health Science (Complementary Medicine)
Canberra Institute of Technology	Advanced Diploma of Naturopathy
Central Queensland University	Bachelor of Science (Chiropractic); Master of Chiropractic Science
Curtin University	Evidence Based Complementary Medicine
Edith Cowan University	Complementary and Alternative Medicines
Macquarie University	Bachelor of Chiropractic Science; Master of Chiropractic; chiropractic clinics
Monash University	Graduate Certificate in Medical Acupuncture
Murdoch University	Bachelor of Science in Chiropractic; Postgraduate Diploma in Sports Chiropractic; chiropractic clinic
RMIT University	Bachelor of Health Science (Chiropractic); Master of Clinical Chiropractic; Bachelor of Applied Science (Chinese Medicine/Human Biology); Bachelor of Health Science (Acupuncture and Chinese Manual Therapy); Master of Applied Science (Acupuncture); Master of Applied Science (Chinese Herbal Medicine); Energy Medicine
Southern Cross University	Bachelor of Clinical Sciences (majors in complementary medicine, naturopathy, osteopathy); SCU Health Clinic
Sunshine Coast TAFE	Certificate in Aromatherapy; Diploma of Reflexology; Certificate and Advanced Diploma in Ayurvedic Lifestyle Consultation
University of New England	Bachelor of Applied Health; Graduate Diploma of Health Science (Herbal Medicine); Master of Health Science (Herbal Medicine)
University of Newcastle	Complementary Therapies in Healthcare
University of Technology Sydney	Bachelor of Health Science in Traditional Chinese Medicine; traditional Chinese medicine/acupuncture clinics
University of Western Sydney	Bachelor of Applied Science (Naturopathic Studies); Graduate Diploma in Naturopathy; Master of Health Science (Traditional Chinese Medicine); UniClinic

* Adapted from Mendham.^{1,2} At some institutions, the curriculum is not clear about whether alternative therapies are discussed, critically examined, supported or actively taught to be practised; to date, our attempts to clarify this have received no response or an ambiguous reply. Other institutions do explicitly mention critical analysis of efficacy and safety as part of their courses. ◆

a standard (not yet defined), and then to monitor the curriculum, recommended texts, teachers and final use of the qualification. Medical schools have intense and regular external accreditation of their courses, but alternative medicine courses have no such safeguards.

FSM supports research into alternative and complementary approaches when this is justified and accepts that modern medicine has more to do in championing an evidence-based approach to all types of care. Our educational institutions, the government and consumers should understand that pseudoscientific health treatments based on unvalidated beliefs are not compatible with the provision of sustainable quality health care.

Competing interests: We are founding members of FSM. Alastair MacLennan has won the South Australian Government Science Excellence Award – Research for Public Good. Robert Morrison has won the Australian Government Eureka Prize for the Promotion of Science.

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The Editor declares that she is a member of FSM.

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