

back pain. The evidence of benefit for neck pain is not as extensive, and continued concern that cervical manipulation may occasionally precipitate vascular injury clouds a contentious debate.

Naturopathy Naturopathy is a discipline that emerged in central Europe in the nineteenth century as part of the Natural Cure movement and was introduced to the United States in the early twentieth century by Benjamin Lust. Fifteen states currently license naturopathic physicians, with considerable variation in the scope of practice. The naturopathic profession is actively seeking licensure in other states. There are estimated to be approximately 3000 licensed naturopathic physicians in the United States. There is also a robust naturopathy presence in Canada. Conventional and unconventional diagnostic tests and medications are prescribed, with an emphasis on relatively low doses of drugs, herbal medicines, healthy diet, and exercise. While there is some support for success of naturopathic practitioners in motivating healthy behaviors, concern exists about the heavy promotion of dietary supplements, most with little rigorous evidence.

Homeopathy Homeopathy was widespread in the United States in the late nineteenth and early twentieth centuries and continues to be a common alternative practice in many European countries, but estimates from the NHIS suggest that less than 1.5% of Americans visit a homeopathic practitioner in any given year. In the United States, licensure as a homeopathic physician is only possible in three states (Arizona, Connecticut, and Nevada) where it is restricted to licensed physicians. The number of practitioners is uncertain, however, because some states include homeopathy within the scope of practice of other fields, including chiropractic and naturopathy, and some practitioners may self-identify as homeopathic practitioners. As discussed below, the regulatory framework for homeopathic remedies differs from other dietary supplements. Homeopathic remedies are widely available and commonly recommended by naturopathic physicians, chiropractors, and other licensed and unlicensed practitioners.

Therapeutic Massage The field of therapeutic massage is growing rapidly, as use by the public is increasing. According to U.S. Department of Labor statistics, there are approximately 155,000 licensed massage therapists employed in the United States, and by 2020, this number is projected to grow by 20%. Forty-three states and the District of Columbia currently have laws regulating massage therapy; however, there is little consistency, and in some states, regulation is by town ordinance. States that do provide licensure for massage therapists typically require a minimum of 500 hours of training at an accredited institution, as well as meeting specific continuing education requirements and carrying malpractice insurance. Massage training programs generally are approved by a state board, but some may also be accredited by an independent agency, such as the Commission on Massage Therapy Accreditation (COMTA). The development of regulatory standards for therapeutic massage has not yet caught up with the evolution of the field or the high demand. Many techniques used are also employed by physical therapists.

Acupuncture and Traditional Chinese Medicine A venerable component of traditional Chinese medicine, with a history of use that extends at least 2000 years, acupuncture became better known in the United States in 1971, when *New York Times* reporter James Reston wrote about how doctors in China used needles to ease his pain after surgery. More than 3 million adults in the United States use acupuncture, according to NHIS data. In a number of European countries, acupuncture is performed primarily by physicians. In the United States, the training and licensure processes for physicians and nonphysicians differ. Currently, acupuncture is licensed in 42 states and the District of Columbia, with licensure standards varying within the scope of practice of each state. Licensure for nonphysicians generally requires 3 years of accredited training and the successful completion of a standardized examination. The main accrediting organization is the Accreditation Commission for Acupuncture and Oriental Medicine. Acupuncture is included in doctor of medicine (MD) and doctor of osteopathic medicine (DO) licensure in 31 states, with 11 states requiring additional training for physicians performing acupuncture.

MIND-BODY INTERVENTIONS

Mind-body practices are a large and diverse group of techniques that are administered or taught to others by a trained practitioner or teacher. Examples include acupuncture, massage therapy, meditation, relaxation techniques, spinal manipulation, and yoga. These approaches are being used more frequently in mainstream health care facilities for both patients and health care providers. Mind-body practices such as meditation and yoga are not licensed in any state, and training in those practices is not subject to national accreditation.

Americans often turn to complementary approaches for help in managing health conditions associated with physical and psychological pain—especially back pain, headache, musculoskeletal complaints, and functional pain syndromes. Chronic pain management is often refractory to conventional medical approaches, and standard pharmacologic approaches have substantial drawbacks. Health care guidelines of the American Pain Society and other professional organizations recognize the value of certain complementary approaches as adjuncts to pharmacologic management.

The evidence base for the effectiveness of these modalities is still relatively incomplete, but a few rigorous examples where there is promise of usefulness and safety include acupuncture for osteoarthritis pain; tai chi for fibromyalgia pain; and massage, yoga, and spinal manipulation for chronic back pain. In addition, new research is shedding light on the effects of meditation and acupuncture on central mechanisms of pain processing and perception and regulation of emotion and attention. Although many unanswered questions remain about these effects, findings are pointing to scientifically plausible mechanisms by which these modalities might yield benefit.

DIETARY SUPPLEMENTS

Regulation The Dietary Supplements Health and Education Act (DSHEA), passed in 1994, gives authority to the U.S. Food and Drug Administration (FDA) to regulate dietary supplements, but with expectations that differ in many respects from the regulation of drugs or food additives. Purveyors of dietary supplements cannot claim that they prevent or treat any disease. They can, however, claim that they maintain “normal structure and function” of body systems. For example, a product cannot claim to treat arthritis, but it can claim to maintain “normal joint health.” Homeopathic products predate FDA drug regulations and are sold with no requirement that they be proved effective. Although homeopathic products are widely believed to be safe because they are highly dilute, one product, a nasal spray called Zicam, was withdrawn from the market when it was found to produce anosmia, probably because of a significant zinc content. Homeopathic products, and indeed other complementary health products and practices, also convey the very significant risk that individuals will use them instead of effective conventional modalities.

Regulation of advertising and marketing claims is the purview of the Federal Trade Commission (FTC). The FTC does take legal action against promoters or websites that advertise or sell dietary supplements with false or deceptive statements.

Inherent Toxicity Although the public may believe that “natural” equates with “safe,” it is abundantly clear that natural products can be toxic. Misidentification of medicinal mushrooms has led to liver failure. Contamination of tryptophan supplements caused the eosinophilia-myalgia syndrome. Herbal products containing particular species of *Aristolochia* were associated with genitourinary malignancies and interstitial nephritis. In 2013, dietary supplements containing 1,3-dimethylamylamine (DMAA), often touted as a “natural” stimulant, led to cardiovascular problems, including heart attacks. Among the most controversial dietary supplements is *Ephedra sinica*, or ma huang, a product used in traditional Chinese medicine for short-term treatment of asthma and bronchial congestion. The scientific basis for these indications was revealed when ephedra was shown to contain the ephedrine alkaloids, especially ephedrine and pseudoephedrine. With the promulgation of the DSHEA regulations, supplements containing ephedra and herbs rich in caffeine sold widely in the U.S. marketplace because of their claims to promote weight loss and enhance athletic