

Are the Current Complementary and Alternative Therapies Available for the Treatment of Low Back Pain and Chronic Fatigue Syndrome Reliable Clinically? A Review of the Literature

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Abstract

Low back pain and chronic fatigue syndrome are major work-related disablers affecting millions around the globe today. This article assesses the clinical reliability of complementary and alternative therapies in the treatment of low back pain and chronic fatigue syndrome using the existing accessible literature. Multiple bibliographic databases that include medical, general health care, and natural medicine literature were searched for relevant terms and conclusions. The authors examined all abstracts obtained through the search and reviewed the full text of the relevant articles along with the additional supporting articles that resulted from the search. It is observed from the literature that most of the complementary and alternative treatments available today are clinically reliable for the treatment of low back pain, as significantly evidenced. However, not many studies support the clinical reliability of the use of complementary and alternative therapies in the treatment of chronic fatigue syndrome.

Keywords

complementary and alternative therapies, acupuncture, Chinese medicine, low back pain, chronic fatigue syndrome

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Introduction

Low back pain and chronic fatigue syndrome are increasingly becoming the most prevalent work-related disablers in developing and industrialized countries.

Low back pain, the most common spinal disorder, is one of the most prevalent health problems in industrialized countries.¹ It is defined as a discomfort, tension, or stiffness below the costal margin and above the inferior gluteal folds, and hence causes work disability.^{2,3} According to the World Health Organization, it affects more than 80% of people at some point in their life and 4% to 33% of a population at any given time.⁴ In the United States, the overall prevalence of low back pain is estimated to be approximately 18%.⁵ Low back pain can be either acute or chronic, depending on the severity of the symptoms.⁶ It can also be divided into specific and nonspecific low back pain. Specific low back pain can be caused by sacroiliitis, facet joint degenerative arthritis, or spinal stenosis, whereas nonspecific low back pain is caused by muscle or other vertebral structures.⁷ Approximately 85% of back pain are non-specific, and up to one third of all such patients will develop chronic low back pain.³ A study conducted in 1998 reveals that 35% of patients with low back pain in the United States

preferred to use complementary and alternative therapies due to dissatisfaction with the mainstream medicine, such as non-steroidal anti-inflammatory drugs, diazepam, cyclobenzaprine, carisoprodol, methocarbamol, and opioids.^{6,7}

Fatigue is a sensation of exhaustion or difficulty to carry out physical or intellectual activities, without recovery after a period of rest. Fatigue can be categorized according to duration as recent fatigue, when fatigue lasts for less than 1 month; prolonged fatigue, when it lasts for more than a month; or chronic fatigue, which usually lasts for more than 6 months.⁸ In most cases, fatigue is transient, but chronic fatigue syndrome is diagnosed when fatigue is not alleviated by rest, causing unrefreshed sleep, lengthy malaise after exertion, sore throat, multi-joint pain without swelling or redness, headaches, impaired

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memory, tender cervical or axillary lymph nodes, and muscle pain.⁹ The prevalence estimates of chronic fatigue syndrome in 2007, for the United States, were between 0.24% and 0.42%, and the prevalence of chronic fatigue syndrome-like illness, in the same period, ranged from 0.25% to 1.67%.¹⁰ As the symptoms for chronic fatigue syndrome cannot be effectively managed by drugs such as acyclovir, nystatin, and hydrocortisone, people prefer to seek complementary and alternative therapies as their choice of treatment.⁷

Complementary and alternative therapies can be defined as a group of nonorthodox and traditional therapies that can be used alone as an alternative, or to complement orthodox or other nonorthodox therapies, in the treatment and prevention of disease in veterinary and human patients.¹¹ According to the National Center for Complementary and Alternative Medicine, complementary and alternative therapies are a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine.¹² According to the World Health Organization, complementary and alternative therapies are known as traditional therapies or a set of health care practices that are usually not integrated into a country's prevailing health care system.⁴ Classified under complementary and alternative therapies are a broad range of practices that are grouped under 4 categories: (a) biologically based practices, (b) body-based and manipulative practices, (c) energy medicine, and (d) mind-body medicine.¹³ *Complementary therapies* refer to complementary and alternative therapies together with conventional medicine, whereas *alternative therapies* refer to the use of complementary and alternative therapies in place of conventional medicine.⁹ On the other hand, *integrative medicine* incorporates elements of complementary and alternative medicine into comprehensive treatment plans alongside solidly orthodox methods of diagnosis and treatment.¹⁴

Complementary and alternative therapies are widely used and are highly popular among patients today. A study conducted in 2003 showed that 30% to 50% of the adult population in industrialized nations such as the United States, Europe, and Australia use some form of complementary medicines or therapies to prevent or treat various health-related problems.¹⁵ According to the 2007 National Health Interview Survey, approximately 38% of US adults aged 18 years and older and approximately 12% of children used some form of complementary and alternative therapies at least once.¹²

The effectiveness of complementary and alternative therapies in treating various types of diseases is still being debated across the globe. This review aims at investigating the clinical reliability of complementary and alternative therapies in the treatment of low back pain and chronic fatigue syndrome from a retrospective angle.

Methods

Data Sources

A total of 12 electronic databases were searched: PubMed/MEDLINE, Cochrane Library, Cumulative Index to Nursing and Allied Health Literature, Current Contents, Embase, JSTOR, Journal Seek, Open J-gate,

Google Scholar, Scirus, Scopus, and Web of Science. Online open access health journals were also included in the search. The databases found under the official Web sites of the World Health Organization, the National Center for Complementary and Alternative Medicine, the National Institute of Arthritis and Musculoskeletal and Skin Disease, the Qigong Research and Practice Centre, the General Pharmaceutical Council database, and the Chinese medicine database "Zhongguo Zhen Jiu" were also referred. Moreover, expert opinions, review articles that contained comparisons on effectiveness of different complementary and alternative therapies for low back pain and chronic fatigue syndrome, randomized control trials, short-term trials, and pilot controlled or uncontrolled studies were also included and searched separately.

All searches were completed on July 30, 2012. Key search terms included complementary and alternative therapies, low back pain, chronic fatigue syndrome, names of various types of complementary and alternative therapies, and interventions including acupuncture, mind-body medicine, spinal manipulation therapy, spinal mobilization therapy, herbal medicine, yoga, and dietary supplements. Relevant terms from controlled vocabularies were used where available, such as MeSH (Medical Subject Headings) for PubMed, ERIC Thesaurus terms, and Current Index to Nursing and Allied Health Literature Headings. Otherwise combinations of keywords were used. Additional articles were referred through examining the reference lists of relevant articles.

Only articles in English language were included in the study. Only studies done on patients were included. All initial abstracts were reviewed and duplicates were eliminated. Abstracts that met this selection criterion were further reviewed by obtaining and reading the full-text articles. Both the authors went through the articles that met the selection criteria. Review articles were dealt separately. Articles that did not contain enough information to reach a clear decision regarding inclusion or exclusion were also read. Based on the full-text articles, some articles were categorized as not meeting selection criteria and were eliminated. The remaining articles then underwent a detailed review to extract the main points in the articles. In addition, the reference lists of the articles were used to identify any additional relevant articles and were subjected to a secondary review.

The results were then grouped according to the type of medical problems (low back pain and chronic fatigue syndrome), type of intervention (acupuncture, manipulation, mobilization, massage, mind and body medicine), duration of pain (acute, chronic), and cause of pain (specific, nonspecific).

Results

Effectiveness of Complementary and Alternative Therapies in Low Back Pain

Ernst and Pittler⁶ had previously analyzed experts' opinions on complementary and alternative therapies for low back pain. According to the analysis, herbalism and homeopathy were found to be ineffective for both acute and chronic low back pain. For acute uncomplicated low back pain, most experts rated spinal manipulation therapy to be effective. Experts' opinions relating to acupuncture for acute nonspecific or specific low back pain were also divided. For chronic nonspecific low back pain, acupuncture was perceived effective in at least some cases by almost three fourths of the experts. For chronic specific low back pain, a minority of the experts considered acupuncture to be effective. Healing, spa therapy, physical

exercise, and patient information were also suggested for low back pain.⁶

Previous studies revealed that acupuncture was not very effective in lowering pain or disability in acute nonspecific low back pain^{16,17} but was effective in reducing short-term pain intensity and functional disability in chronic nonspecific low back pain when compared with untreated or placebo-treated subjects.¹⁸⁻²⁰ When compared with pain medications, acupuncture showed no difference in reducing pain or disability in subjects with chronic nonspecific low back pain.²¹⁻²⁴ Spinal manipulation therapy was found to be more effective than acupuncture in reducing immediate posttreatment pain^{22,23} while massage therapy was better in reducing pain intensity and disability for chronic nonspecific low back pain.²⁵ When compared with physical modalities (light, electricity, heat), analgesics, anti-inflammatory drugs, and primary care, acupuncture was found to be more effective in reducing immediate pain and disability.^{26,27} However, there was no significant difference in posttreatment disability between acupuncture plus usual care (limited bed rest, education, nonsteroidal anti-inflammatory drugs, and activity alterations) treated patients and patients treated with only usual care for acute nonspecific low back pain, while subjects with chronic nonspecific low back pain showed better short-term/intermediate-term pain intensity reduction.²⁸

Spinal manipulation therapy showed immediate pain reduction when compared with untreated^{29,30} or placebo-treated subjects,^{29,31,32} but no effect was observed in reducing disability when treating acute nonspecific low back pain.³³ Spinal manipulation therapy was more effective than placebo in reducing pain intensity immediately or short-term for chronic nonspecific low back pain.³⁴⁻³⁶ When compared with pain medication, spinal manipulation therapy was merely effective in reducing pain intensity.^{22,23} In older subjects, spinal manipulation therapy gave significantly better results compared with subjects treated with medical care (exercise, bed rest, analgesics) alone, in improving immediate and short-term disability, although there was no significant difference in the reduction of pain intensity.³⁷ Subjects who received a combination of spinal manipulation therapy along with exercise, analgesics, or muscle relaxants showed improved pain reduction and disability compared with untreated subjects.^{38,39}

Spinal mobilization therapy improved pain intensity while showing inconsistent results regarding disability in acute and chronic nonspecific low back pain subjects compared with untreated or placebo-treated subjects.^{40,41} No studies were conducted till date to compare the effectiveness of mobilization therapy versus pain medication in treating subjects.⁴² Three separate studies suggest that spinal mobilization therapy is more effective than physiotherapy in treating chronic nonspecific low back pain by lowering pain intensity and disability immediately.⁴³⁻⁴⁵ One interesting finding about spinal manipulation therapy was that it reduced pain and disability more effectively when compared with spinal mobilization therapy.⁴⁶ However, it was worse than or no different from massage in reducing short-term pain intensity in treating chronic nonspecific low back pain.^{47,48}

It is reported that massage therapy was found to be clinically effective and reliable among subjects with acute low back pain compared with untreated or placebo-treated subjects in reducing pain and disability.⁴³ However, massage therapy did not significantly differ from untreated or placebo-treated therapy in improving pain immediately, short-term pain intensity, or disability for chronic nonspecific low back pain.^{49,50} No studies were conducted to compare the effectiveness of massage therapy versus pain medication in low back pain.⁴² Massage therapy was reported to be significantly effective in reducing pain immediately compared with relaxation^{51,52} or physical therapy^{53,54} but showed no significant differences in improving intermediate-term pain or disability when compared with usual care therapy, namely, advice and exercise,⁵⁵ for the treatment of chronic nonspecific low back pain.

Herbal medicines such as harpagophytum, willow bark, and capsicum plaster are well known to treat low back pain.⁵⁶ When harpagophytum was administered to subjects having low back pain, it was observed that there were no significant differences in pain relieving or recovery compared with untreated, placebo-treated, or active treatment such as using rofecoxib.⁵⁷⁻⁵⁹ When compared with placebo, willow bark was found to be efficacious for short-term recovery.⁶⁰ However, when willow bark treatment was compared with rofecoxib, the former had better pain relieving action but showed no difference in recovery.⁶¹ Treatment using capsicum plaster showed a small effect in short-term recovery when compared with placebo.^{62,63}

Mind-body therapy that includes cognitive or behavioral components was found to be more effective in subjects when compared with untreated or single-modality treatments such as physical therapy or usual medical care in patients with chronic low back pain. When compared with wait list controls or usual medical care subjects, mind and body medicine treated subjects had a moderate positive effect on pain but lesser effects on functional status and behavioral outcomes. When compared between hypnosis treatment and relaxation treatment, no differences were observed in the reduction of pain in subjects with low back pain. However, subjects who received relaxation therapy had a superior biofeedback in pain reduction.⁶⁴ Turner reported that cognitive-behavioral treatment was found to be more effective than progressive relaxation in maintaining treatment effects over a period of 18 to 24 months.⁶⁵ According to a randomized controlled trial conducted by Tilbrook et al, yoga therapy showed gradual improvement in lower-back function and pain intensity when compared with the usual care groups, for chronic low back pain.⁶⁶ Moreover, it is reported that, when compared with back strengthening exercises, yoga can be more effective than conventional therapeutic back exercises in decreasing pain at 26 weeks.⁶⁷

Effectiveness of Complementary and Alternative Therapies in Chronic Fatigue Syndrome

In comparison to low back pain, there are fewer complementary and alternative therapies employed to treat chronic fatigue syndrome, which include supplements, massage therapy,

homeopathy, mind-body medicine, *tuina*, *tai chi*, and acupuncture. Dietary supplements such as antioxidants, magnesium, and co-enzyme Q₁₀ were reportedly used to treat chronic fatigue syndrome in many studies. Chronic fatigue syndrome has also been treated with supplements such as vitamin C, vitamin B, zinc, L-tryptophan, L-carnitine, sodium, and essential fatty acids. In a study conducted in 1999, 31% of patients preferred to use oral nicotinamide adenine dinucleotide as it has no serious adverse effects. When compared with placebo and psychological therapy, oral nicotinamide adenine dinucleotide was shown to have a positive effect in the treatment of chronic fatigue.^{68,69} L-carnitine is also reported to yield clinical improvement in chronic fatigue syndrome.⁷⁰ A study using magnesium supplements was found to have an overall beneficial effect as well as symptom reduction.⁷¹ Supplements of acetyl-L-carnitine and propionyl-L-carnitine showed overall positive effect in a randomized controlled trial published in 2004.⁷² Amino acid supplementation also showed positive results in 15/20 patients in another study.⁷⁰

In studies involving massage therapy, it was found that massage reduced symptoms such as depression, fatigue, levels of stress hormones, anxiety, pain, and insomnia on several measures of physical, psychological, and laboratory testing for chronic fatigue syndrome.^{71,73} Field et al conducted a 10-day follow-up study using massage therapy and reported marked reduction in fatigue-related symptoms, particularly somatic symptoms, emotional stress, depression, difficulty in getting sleep, and pain.⁷³ However, any reported changes in the treatment group either did not persist over time or follow-ups were not conducted. Moreover, it is unclear whether there are any long-term effects of massage treatment for chronic fatigue syndrome.⁷¹

Homeopathy treatment showed significant improvement in symptomatology as well as an overall improvement in chronic fatigue syndrome. When compared with placebo, it showed improved response to fatigue, function, and symptomatology.^{71,74} In one of the studies conducted with homeopathy, it was revealed that more subjects in the homeopathic medicine group showed recovery when compared with placebo, but the evidence is weak.⁷⁴

Mind-body medicines such as *Qigong* and *tai chi* also showed positive effects on fatigue. These therapies were able to reduce sleep-related problems, health distress, and pain. They also improved social activity, mental health index, and psychological well-being.⁷⁵ "Mindfulness-based stress reduction" has shown to reduce anxiety when compared with a wait-listed control. However, when compared with distant healing therapy, "mindfulness-based stress reduction" did not show any significant effect.⁷⁶ Apart from the above-mentioned therapies, meditation has proved to reduce symptomatology and pain whereby it increased normal functioning of systems.⁷¹

Tuina has been found to improve sleep quality in people associated with chronic fatigue syndrome and has helped adjust their mental conditions, as those with chronic fatigue syndrome would usually present with sleep disorders and mental or psychological abnormality.⁷⁷ According to a study conducted by

Liu and Lei, the effective rate of *tuina* (93.3%) is higher than *tai chi* (80.0%) and fluoxetine drug group (73.3%) in treating chronic fatigue syndrome.⁷⁸

A case study of chronic fatigue syndrome reported by Mears in 2005 showed remarkable improvement after continuous treatment with acupuncture therapy for 6 months.⁷⁹ According to Lin et al, chronic fatigue syndrome subjects showed reduction in pain, ability to sleep better, increased energy levels, and decreased fatigue levels after treatment with acupuncture when compared with untreated subjects.⁸⁰

Many studies have used traditional Chinese herbal medicines to treat chronic fatigue syndrome. A double-blinded, placebo controlled trial, using *Liu-Wei-Di-Huang-Wan*, demonstrated enhancement of cognitive ability and helped the elderly recover from a cognitive defect, which is one of the most important clinical manifestations in chronic fatigue syndrome.^{81,82} A randomized trial using *Bu-Zhong-Yi-Qi-Tang* in combination with *Xiao-Chai-Hu-Tang* showed that 18 patients were able to resume normal daily activities while the symptoms of another 16 patients were relieved.^{81,83} Out of the 134 chronic fatigue syndrome patients used in a study, *Ren-Shen-Yang-Rong-Tang* was shown to have relieved the symptoms of chronic fatigue syndrome in 98 patients.⁸⁴ *Yi-Gan-San* was shown to have improved the psychological symptoms of dementia⁸⁵ and *Suan-Zao-Ren-Tang* demonstrated good sleep in chronic fatigue syndrome patients.⁸⁶

An Ayurvedic herbal medicine known as "Stress Guard" was found to reduce the symptoms of chronic fatigue syndrome. This formulation consisted of *Withania somnifera* (Ashwagandha), *Bacopa monnieri* (Brahmi), and *Nardostachys jatamansi* (Jatamansi). Studies on Ashwagandha and Brahmi show that they have antistress properties,^{87,88} whereas Jatamansi was used to induce refreshing sleep and reduce anxiety and tension, which are the main symptoms of chronic fatigue syndrome.⁸⁹

Discussion

This retrospective mini review focuses on searching answers to find out whether the available complementary and alternative therapies are clinically reliable enough in treating low back pain and chronic fatigue syndrome, both of which are interlinked in many ways. Here we discuss the clinical reliability of some of the current complementary and alternative therapies and their efficacies in treating low back pain and chronic fatigue syndrome. The National Center for Complementary and Alternative Medicine defines acupuncture as a family of procedures involving the stimulation of anatomical points on the body using a variety of techniques. It involves penetrating the skin with thin, solid, metallic needles that are manipulated by electrical stimulation or by the hands.¹² According to the National Institute of Alternative Medicine Sciences, acupuncture is based on the theory that a life force called *Qi* flows through the body along certain channels, which if blocked can cause illness. Hence, the insertion of thin needles at precise locations, along these channels, by practitioners can unblock

the flow of *Qi*, relieving pain and restoring health. However, doctors believe that by inserting needles the body's natural pain-numbing chemicals, such as endorphins, serotonin, and acetylcholine, can be produced.⁹⁰ According to one of the reviews obtained, acupuncture was proven to be effective for chronic low back pain, though its effectiveness is due to noninvasive stimulation of acupuncture points and not the insertion of needles.¹³ Based on the available results and qualitative studies done, it can be concluded that acupuncture is one of the promising candidates for future research with alternative therapies.⁷¹

Herbal medicines are entire plants, plant parts, and plant products that are used for medicinal purposes.⁹¹ According to the Medicines Act 1968 of the United Kingdom (section 132) and the Medicines Regulations (Traditional Herbal Medicinal Products for Human Use) 2005 of the United Kingdom, herbal medicines are defined as medicines that have been produced by subjecting plants to a process that includes crushing, drying, and mixing with other herbal products, inert substances, or water.⁹² Though there are promising outcomes for herbal medicines in the treatment of low back pain, due to low quality of evidence, no conclusions could be drawn.¹²

Spinal manipulation therapy is the application of controlled force to a joint, moving it beyond the normal range of motion in an effort to restore health. Spinal manipulation therapy can be performed as a part of other therapies or other whole medical systems, including chiropractic, massage therapy, and naturopathy. Practitioners perform spinal manipulation by using their hands or a device to apply a controlled force to a joint of the spine, moving it beyond its passive range of motion. The amount of force applied depends on the form of manipulation used. The goal of the treatment is to relieve pain and improve physical functioning.⁹³ According to the National Center of Complementary and Alternative Medicine, there is high quality of evidence to support the effectiveness of spinal manipulation therapy in low back pain treatment.¹² The American College of Physicians and the American Pain Society have included spinal manipulation therapy as one of the treatment options, in their guidelines (2007) for practitioners to consider spinal manipulation therapy when pain does not improve with self-care.¹²

Massage therapy focuses on restoring, preserving, and optimizing health by natural hands-on care involving manipulating the muscular system.⁷⁰ Massage is done by pressing, rubbing, and manipulating the muscles and other soft tissues of the body. According to a review in 2008, 13 clinical trials had showed that massage might be useful for chronic low back pain.⁹⁴ However, with respect to chronic fatigue syndrome, it is not certain whether massage therapy has any long-term effects.⁷¹

The manipulation of the processes of the human mind to affect the health of the body is known as mind-body medicine. These approaches encompass a wide spectrum of modalities, including relaxation, meditation, biofeedback, *tai chi*, and cognitive-behavioral therapies. In the therapeutic setting, mind-body interventions have been used to reduce psychological distress, change physiologic symptoms, alter perceptions, and change unhealthy behaviors such as smoking and unhealthy

eating habits leading to obesity.⁹⁵ *Qigong* is a Chinese healing system and energy medicine that uses gentle movement, breathing, and meditation to strengthen, cleanse, and circulate the life energy,⁹⁶ whereas *tai chi*, which is a Chinese martial art and a mind-body practice, involves moving the body slowly, gently, and with awareness, while breathing deeply.¹² Yoga, on the other hand, is a mind-body practice originated from India that combines physical postures, breathing techniques, and meditation or relaxation.¹² There is strong evidence that mind-body medicine is effective in treating low back pain by reducing pain and improving functional status and behavioral outcomes.⁶⁴ Meditation uses mindfulness-based stress reduction. *Qigong* offers promising outcomes for chronic fatigue syndrome but more studies involving longitudinal follow-ups and appropriate control groups are needed before the potential of these outcomes can be confirmed.⁷¹

According to the Arkansas Board of Physical Therapy, spinal mobilization therapy is a passive movement accomplished within the normal range of motion of the joint. It is a manual therapy technique comprising a continuum of skilled passive movements of the joints and related soft tissues that are applied at varying speeds and amplitudes and include a small-amplitude/high-velocity therapeutic movement.⁹⁷ Studies show that spinal mobilization therapy can be effective in treating low back pain but not chronic fatigue syndrome.

The US Dietary Supplement Health and Education Act of 1994 defines dietary supplement as a product, other than tobacco, intended to supplement the diet that bears or contains one or more dietary ingredients such as vitamins, mineral herbs or other botanicals, amino acids or their constituents. It is intended to be taken by mouth as a pill, capsule, tablet, or liquid, and is labeled as a "dietary supplement" on the front panel.⁹⁸ Dietary supplements such as magnesium and L-carnitine can be effective, but due to the lack of quality studies, no conclusion could be made.⁷¹

Homeopathy involves the treatment with diluted portions of homeopathic preparations. The principle of homeopathy revolves around the concepts of "like cures like," which means that a disease can be cured by a substance that produces similar symptoms in a healthy person, and "law of minimum dose," which notes that lower the dose of the medication, greater its effectiveness.¹² Even though, homeopathy has have been proven to be effective, but given the limited number of studies, no conclusions can be offered on this treatment type, with suggestions of having a greater potential for future research.⁷⁰

Tuina is an independent discipline of medicine that plays an increasingly important role in medical practice. *Tuina* is believed to clear the meridians, improve the role of *Qi* and blood circulation, enhance blood flow velocity, improve microcirculation, and promote the removal of metabolites.^{91,99} *Tuina* has shown positive results in a number of studies for both low back pain and chronic fatigue syndrome, but due to the nature of control groups and the low quality of studies, more research will be needed before any conclusion can be made.¹⁰⁰

Chinese herbal medicines are medicinal substances that are primarily plants, along with some minerals and animal products

that are classified by their perceived action in the body. Generally, different parts of plants such as leaves, roots, stems, flowers, and seeds are used. Herbs are combined in formulas and are given as teas, capsules, tinctures, or powders.¹² There are plenty of evidences that Chinese herbal medicine is effective in the treatment of low back pain, but with regard to chronic fatigue syndrome, the evidences are too few for any conclusion to be made.

Ayurveda, which is known as the “knowledge of life,” is based on the idea that the balance between the 3 *doshas* in the human body—*vata*, *pitta*, and *kapha*—is the key for optimum health.^{101,102} Hence, the imbalance of the *doshas* will cause disease. Chronic fatigue syndrome, in ayurveda, is diagnosed as a deficiency in the essence of food or plasma (*rasa*), building blocks (*dhatu*), and life energy (*ojas*) and is basically treated with tonifying herbs.¹⁰² Although there are some studies regarding the efficacy of ayurveda in the treatment of chronic fatigue syndrome, there are limited number of randomized controlled trials carried out on this field, and thus there is no significant evidence to conclude that ayurveda is effective in the treatment of chronic fatigue syndrome. However, there are few studies that have shown that ayurveda is reliable for low back pain.

It has to be noted that there might be a high risk of bias in this review. This is due to the inclusion of reports and conclusions from numerous randomized controlled trials, uncontrolled studies, short-term trials, and randomized double-blind pilot studies from the literature. The results from the pilot studies may not be accurate since such pilot studies are investigations designed to test the feasibility of methods and procedures for a later use on a larger scale or to search for possible effects and associations that may be worth following up in a subsequent larger study.¹⁰³ Uncontrolled studies are also unreliable because these are studies that lack a contemporaneous comparison group.¹⁰⁴ Besides the above, there is also a tendency to only publish positive results, whereas negative results are more likely to remain unpublished. Furthermore, there is also social desirability bias in the results of low back pain and chronic fatigue syndrome as the results are based on expert opinion such as doctors.

Conclusion

It can be concluded that complementary and alternative therapies, except herbal medicine, are clinically reliable for low back pain. The reason for the clinical reliability of complementary and alternative therapies on low back pain might be corroborated to more number of clinical trials that were conducted and hence more clinical evidence was established. On the other hand, there is not much evidence regarding the clinical reliability of complementary and alternative therapies for the treatment of chronic fatigue syndrome. However, more research is needed to further assess the various associated factors that contribute to the clinical reliability of complementary and alternative therapies in treating chronic fatigue syndrome and low back pain.

Author Contributions

CWY completed the first draft outline, abstract, and references. DKC completed the introduction and provided edits.

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