Evidence Based Medical Benefits of Yoga

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ABSTRACT

Yoga helps achieve balanced health by connecting the mind and body through a series of postures, breathing exercises and meditation. Regular practice results in an increase in flexibility and strength, an improvement in posture, and better mood and concentration. Today over 16 million Americans practice yoga on a regular basis. Over the last decade, several scientific studies have established therapeutic benefits of yoga practice. As a result, yoga has emerged as a potential integrative modality for the management of several common medical diseases. The United States National Center for Complementary and Alternative Medicine (NCCAM) is presently supporting research on the benefits of yoga on diabetes risk factors, HIV, immune function, arthritis, menopausal symptoms, multiple sclerosis, posttraumatic stress disorder and smoking cessation. This research initiative by NCCAM is aimed at establishing evidence based data on the therapeutic benefits of yoga. It also provides further credibility to this centuries old practice. This brief review looks at some conditions where yoga may have already established evidence based beneficial effects.

Key words: yoga, asana, pranayama, meditation, evidence based benefits.

1. INTRODUCTION

Having its origins in India thousands of years ago, yoga is a mind-body practice. The Yoga Sutras (aphorisms) describe eight limbs of practice: yama (moral behavior), niyama (healthy habits), asanas (physical postures), pranayama (breathing exercises), pratyahara (sense withdrawal), dharana (concentration), dhyana (contemplation) and samadhi (higher consciousness). Although ubiquitous and invariably practiced informally in India, formal yoga activity is becoming increasingly popular in the western world. (1) Commonly practiced yoga sutras in the West include physical poses (asanas), breathing techniques (pranayamas) and meditation (dharana and dhyana). Regular practitioners report an increase in flexibility and strength, an improvement in posture, and better mood and concentration. Growing scientific evidence also supports a beneficial impact on many disease states (1-4). This article briefly reviews the scientifically proven benefits of yoga practice in some of the more common and more researched conditions.

2. DISCUSSION

Literature review was done primarily by using PubMed. Other sources of evidence based benefits of yoga were also utilized. The following fifteen conditions appear to be most researched in the complementary use of yoga.

2.1. Anxiety

Anxiety is a negative emotion characterized by an emotional paralysis when confronted with a threat. This inability to predict, control or gain preferred results may be to external or internal threats, and can be real or imagined. It results in a persistent and pervasive worry and tension. Anxiety disorders are among the most prevalent of mental disorders. Patients with clinically diagnosed anxiety appear to suffer from a higher overall disability and mortality when compared to non-anxious people. 190 studies were found since 1966 that assessed the benefits of yoga practice on anxiety patients. Yoga incorporates gentle non-competitive physical exercises, controlled breathing and mindful meditation that positively modulates the stress response systems in these patients. The collateral benefits of yoga may also help alleviate associated disease conditions often seen in patients with anxiety (5, 6).

2.2. Arthritis

Arthritis is a leading cause of disability all over the world. It affects over 50 million Americans and its incidence is rising. The two common forms of arthritis are osteoarthritis – a degenerative joint disease associated with the breakdown of the joint cartilage and the underlying bone and rheumatoid arthritis – a chronic synovitis primarily affecting the multiple peripheral joints. Pain in arthritis leads to reduced activity, resulting in muscle and tendon shortening, articular capsule contraction and weakened ligaments. A literature review found 31 studies 1994 that assessed the benefits of yoga practice on arthritic patients. Yoga provides gentle non-competitive stretching, strengthening, conditioning and balancing exercises that are beneficial in these patients and are extremely safe. They lead to reduced pain and increased functionality. There is an associated sense mental well being (7, 8).

2.3. Asthma

Asthma is a well-recognized clinical condition affecting a significant portion of the population. It affects more than 300 million people worldwide. It is characterized by reversible airflow obstruction, airway hyper-responsiveness and inflammation. Patients with clinically diagnosed bronchial asthma suffer from a higher overall disability and mortality when compared to healthy people. 70 studies were found on PubMed dating back to 1963 that assessed the benefits of yoga practice in patients with asthma (9-13).

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with bronchial asthma. Although pharmacological treatment is the mainstay of management in most patients with asthma, yoga may play a strong complementary role. Pranayama exercises and asanas improve disturbed respiratory perception and help train and strengthen respiratory muscles and ligaments that are dysfunctional in these patients. There may be associated benefits derived from meditative relaxation (9, 10).

2.4. Attention Deficit Hyperactivity Disorder

With a worldwide-pooled prevalence of 5.3%, attention deficit hyperactivity disorder is the most prevalent mental disorder in children. Recent years have seen an upward trend in the diagnoses of attention-deficit hyperactivity disorder in the developed world. There has also been a significant increase in the prescribing of medications for this condition. According to the American Academy of Pediatrics, attention-deficit hyperactivity disorder is the most common neurobiological disorder of children and adolescents in the USA. Pharmacological treatment for attention deficit hyperactivity disorder is highly effective. Behavioral therapy is also effective with medication. Treatment prevents serious future health consequences. However, clinical response, optimal dosage and tolerability are often variable in patients. A total of 10 studies were found dating back to May of 2004 that assessed the benefits of yoga practice in patients with the attention-deficit hyperactivity disorder. Complimentary yoga in children and adolescents has shown to improve children’s attention, relationships with parent/guardians, listening skills and peer interactions (11).

2.5. Cardiovascular Disease

Cardiovascular disease is the leading cause of death and a major cause of disability worldwide. The World Health Organization estimates that an estimated 17.3 million people died from cardiovascular diseases in 2008, and this number will rise to 23 million by 2030. Over 80% of CVD deaths take place in low- and middle-income countries. Estimated direct and indirect costs associated with cardiovascular disease exceed $100 billion/year in the USA. However cardiovascular disease is a preventable pandemic. A literature review found a total of 181 studies since October of 1961 that assessed the benefits of yoga practice in patients with cardiovascular diseases. Yoga helps improve most risk factors associated with cardiovascular diseases. It reduces sympathetic tone, improves endothelial function and positively modulates coagulopathy parameters. Regular practice prevents progression and may also induce regression of atherosclerosis in these patients. It reduces symptoms, prevents complications and improves prognosis in these patients (12, 13).

2.6. Carpal Tunnel Syndrome

Carpal tunnel syndrome involves median nerve compression at the level of the wrist. It is the most commonly occurring peripheral nerve compression syndrome. It is strongly associated with forceful and repetitive work involving the hand and wrist. It commonly occurs after the age of 30 years and is significantly more prevalent in women. Carpal tunnel syndrome usually results from repetitive injuries to wrist and hand. Conventional treatment includes oral medications, steroid injections, wrist splints and physical therapy. Treatment is difficult and often culminates in decompression surgery. A literature review using PubMed identified 19 studies since 1998 that assessed the benefits of yoga practice in patients with carpal tunnel syndrome. Yoga exercises are associated with a reduction in pain, improved grip strength and increased functionality. There is a reduction in recurrences. Other associated benefits of yoga may help reduce contributing factors such as work related stress, tension and fatigue (14).

2.7. Depression

Depression affects about 121 million people worldwide and is a major cause of disability and distress. It is expected to become the second most common cause of loss of disability-adjusted life years in the world by 2020. Depression often presents as comorbidity with chronic physical illnesses such as coronary heart disease, asthma and rheumatoid arthritis. This results in worse clinical outcomes. Patients with coronary heart disease and depression have an approximate two-fold increase in morbidity and mortality. Management of depression is complex and often results in medicalization of misery. We identified 169 studies since 1974 that assessed the benefits of yoga practice in patients with depression. Complementary use of yoga is a promising intervention for depression. Its regular practice is associated with many other beneficial emotional, psychological, behavioral and biological effects in depressed patients (15, 16).

2.8. Diabetes Mellitus

The human population is experiencing an inexorable rise in diabetes. It is estimated that the prevalence of diabetes worldwide will increase from 285 million in 2010 to 438 million in the year 2030. Global projections for pre-diabetes estimate an increase from 344 million in 2010 to 472 millions in 2030. This dysglycemic assault has important present and future medical and economic relevance. Diabetes mellitus is associated with significant morbidity and premature mortality. It is associated with significant micro-vascular and macro-vascular complications. They also suffer from associated neuropathic complications. We identified 66 studies on PubMed dating back to 1986 that assessed the benefits of yoga practice in patients with diabetes mellitus. Yoga helps improve most risk factors associated with diabetes mellitus. Regular practice reduces symptoms, prevents complications and improves prognosis in these patients. A significant fall in HbA1c has been recorded in some studies (17, 18).

2.9. Epilepsy

Epilepsy is diagnosed if there is an occurrence of at least 2 unprovoked seizures 24 hours apart. It is also characterized by the neurobiologic, cognitive, psychologic, and social consequences. Seizures in epilepsy can occur due to several causes, including a genetic predisposition for certain seizures, head trauma, stroke, brain tumors, alcohol or drug withdrawal, and other medical anomalies. The underlying cause is abnormal electrical discharges in the brain. Epilepsy is associated with significant morbidity and disability. Treatment with anticonvulsants results in a seizure free status in only 60% of patients. Most patients also require social and/or vocational rehabilitation. We identified 28 studies dating back to 1972 that assessed the benefits of yoga practice in patients with epilepsy. Since stress can trigger seizures, mental relaxation and stress reduction with meditation may be beneficial in these patients. It also helps increase satisfaction with life in these patients (19, 20).

2.10. Hypertension

Hypertension has reached epidemic proportions worldwide. Its prevalence dramatically increases in patients older than 60 years and approaches 50%. In 2001, approximately 54% of all strokes and 47% of all ischemic heart disease related deaths were attributable to systolic hypertension. Hypertension related deaths are expected to increase by over 60% by 2025, rising from 972 million to 1.56 billion worldwide. It is responsible for approximately one half of the health burden and costs worldwide. Hypertension is a silent killer but is largely a controllable pandemic. Although medication and lifestyle changes are effective in treating hypertension, awareness and treatment compliance remains low. A literature review found 93 studies...
since 1961 that assessed the benefits of yoga practice in patients with essential hypertension. Yoga practice can help produce significant reductions in blood pressure on top of optimal medical therapy (21, 22).

2.11. Insomnia
Insomnia is defined as repeated difficulty with the initiation, duration, maintenance, or quality of sleep and resulting in some form of daytime impairment. It is estimated that as many as 95% of Americans have reported an episode of insomnia at some point during their lives. Chronic insomnia is associated with impaired occupational and social performance. It is associated with higher healthcare use, with a 2-fold increase in hospitalizations and office visits. Insomniacs have an elevated absenteeism rate that is 10-fold greater than controls. Chronic insomnia is also a risk factor for depression and a symptom of a number of medical, psychiatric, and sleep disorders. Pharmacological agents used in the treatment of insomnia are often associated with hazardous side effects. A total of 28 studies were found on PubMed since 1963 that assessed the benefits of yoga practice in patients with insomnia. Yoga practice may help produce a significant improvement in sleep quality and related daytime impairments in these patients (23, 24).

2.12. Irritable Bowel Syndrome
Irritable bowel syndrome is a functional gastrointestinal disorder, with no structural abnormalities. It is characterized by symptoms of recurrent abdominal pain or discomfort directly associated with disturbances. It is estimated to affect between 10 and 15% of the adults in the USA. It is associated with a significant morbidity and heavy utilization of healthcare resources. Treatment is often difficult. Irritable bowel syndrome remains poorly understood and continues to pose a significant burden for patients as well as the healthcare system. Conventional therapies include the use of bulking agents, anti-diarrheals, and antispasmodics. A total of 14 studies were found since July 1986 that assessed the benefits of yoga practice in patients with irritable bowel syndrome. Mindfulness meditation and gentle yoga helps alleviate many of the symptoms associated with this condition (24, 25).

2.13. Low Back Pain
Low back pain is common in the general population. Low back pain accounts for almost 2.5% of all office visits and a significant number of emergency room visits in the USA. It is estimated to be present in more than 70% of the geriatric population. Direct and indirect costs in the USA are estimated to exceed one hundred billion dollars. Low back pain usually results from injuries to the soft tissues of the back. Conventional treatment includes medications, physical therapy and sometimes surgery. 77 studies were found since 1977 that assessed the benefits of yoga practice in patients with low back pain. Stretching and strengthening of the low back muscles and ligaments with yoga asanas appears to help alleviate pain and suffering and improve functioning in these patients (26, 27).

2.14. Menopause
Menopause is diagnosed after 12 months of amenorrhea. It is preceded by hormonal changes that begin years before its onset, a period often called peri-menopause or the menopausal transition. Clinical symptoms of menopause include irregular and unpredictable menses, vasomotor and urogenital symptoms such as vaginal dryness and dyspareunia, headaches, insomnia and mood dysfunction. Osteopenia and an increase in cardiovascular disease are also commonly associated with the onset of menopause. Treatment of menopause is aimed at providing relief of vasomotor symptoms, to reduce the risk of unwanted pregnancy, to avoid the irregularity of menstrual cycles, to prevent osteopenia, to prevent cardiovascular disease and finally to improve the quality of life. However, treatment is difficult. PubMed revealed a total of 40 studies were found since 1998 that assessed the benefits of yoga practice in patients with the menopausal syndrome. Studies show that yoga therapy decreases climacteric symptoms, perceived stress, and neuroticism in peri-menopausal women (29, 30).

2.15. Multiple Sclerosis
Multiple sclerosis is an immune-mediated inflammatory disease that attacks and destroys myelinated axons in the central nervous system. The course of the disease is usually a relapsing-remitting pattern with short-term episodes of neurologic deficits that often resolve completely or almost completely. Sclerotic plaques may however accumulate leading to progressive physical disability. The etiology of multiple sclerosis remains unknown and multiple factors such as viral or bacterial infection, exposure to chemicals and lack of sun exposure are thought to act in concert with genetic predisposition to immune dysfunction to trigger or perpetuate the disease. Ideal treatment for patients with multiple sclerosis remains lacking. Conventional treatment is directed at immunomodulatory therapy and management of symptoms. Non-pharmacologic treatments include physical and occupational therapy. A total of 14 studies were found since 1994 that assessed the benefits of yoga practice in patients with the multiple sclerosis. Yoga practice resulted in improved muscle tone, decreased fatigue and reduced muscle spasms (31).

3. CONCLUSION
Yoga is practiced by most people to improve their physical health and fitness, relieve stress, and enhance the quality of life. However, yoga is increasingly being recognized as an important complementary therapeutic modality in disease states. (32) Physicians are increasingly integrating postures, breathing exercises and meditation in the treatment of patients' health disorders. Besides the conditions mentioned in this brief review, there are at least another thirty five common medical conditions where it may have a therapeutic value. Yoga is readily available, is easy to perform, incurs no cost and has a low attrition rate. Although generally safe, it is advisable for people with uncontrolled blood pressure, glaucoma, or sciatia, and women who are pregnant to modify or avoid some yoga poses. Years of human experience has established that the regular practice of yoga is an excellent way to maintain overall health and to prevent illness. Emerging evidence based research is now proving that when used in concert with conventional treatment, it may not only help alleviate symptoms, but is effective in controlling and even reversing many disease processes.

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