Effectiveness of Yoga Therapy (A Mind-Body Medicine) in Prevention and Management of Chronic Low Back Pain (CLBP): A Review Based on Evidence

Running title: Yoga for chronic low back pain

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Abstract: Back pain is an increasing economic and health problem affecting nearly 80% of the general population. Healthcare costs for low back pain (LBP) are increasing rapidly. Hence, it is important to provide effective and cost-effective treatments. Patients with CLBP are often unsatisfied with conventional medical treatment and seek complementary and alternative therapies, such as massage, acupressure, and other mind-body techniques. Mind-body techniques, such as yoga, tai chi, sensory awareness, body awareness therapy, and breath therapy are said to help patients with low back pain by enhancing body awareness. Yoga plays a significant role in enhancing one's psychological and physical health. Many CLBP patients seek relief using complementary therapies such as yoga. For this review, 12 randomized controlled trials (RCT's) have been reviewed from different databases. Details of the all RCT which suggest the management and prevention of CLBP through yoga are mentioned in the text. Based on the available researches, it appears that yoga is the most effective treatment approach to low back pain when comparing other CAM treatments.

Keywords: CLBP; Yoga therapy; RCT; Pain; Flexibility; Stress.

1. Introduction

In recent years, back pain is becoming a common health problem in general population.[1] Because of the evolutionary adaptation, the human spine gives troubles in 80% of the general population at a certain moment of life.[2] Low back pain (LBP) is an increasing economic and health problem affecting around 80% of the general population.[3]

Chronic low back pain (CLBP) is defined as the pain that persists longer than twelve weeks and is often attributed to degeneration of the spine.[4] Prolapses of intervertebral disc are the most common cause of compression of the spinal cord and nerve roots. Prolapse is more common in the lumbar region usually below the level of the spinal cord that is below L2, so the injury is to the nerve roots only.[2] Nonspecific chronic low back (nCLBP) pain is prevalent among adult population and often leads to functional limitations, psychological symptoms, lower quality of life, and higher healthcare costs.[5]

The most common reasons for back pain are the incorrect postures and constant feeling of restlessness of mind and psychological-emotional strain.[2] Apart from this injury, infection and tumor in back can be the possible causes of low back pain. Four major factors responsible for increasing problem of back pain are: a. muscles are weaker than our ancestors, b. wrong muscles are overworked, c. repeated injuries due to unused exercise and d. psychological stress.[6]

Most people have experienced back pain sometime in their life. The causes of back pain are numerous, some are due to bad habits. Other back pain causes include accidents, muscle strains, and sports injuries. Although the causes may be different, most often they share the same symptoms. Symptoms of back pain include persistent aching or stiffness anywhere in the spine, inability to stand straight without having pain or muscle spasms in the lower back.

For the diagnostic purpose, medical history and a thorough physical examination are necessary. The doctor may test reflexes and sensation using a pin or other sharp object to assess any loss of sensation in the legs. Spinal X-rays are also used to check the curve of the spine. For analyzing soft-tissue damage such as disk herniation, magnetic resonance imaging (MRI) may be needed. Magnetic resonance imaging (MRI) is a well-documented diagnostic technique for the study of degenerative disc disease.[7-9]

2. Complementary and alternative medicine (CAM)

Healthcare costs for low back pain (LBP) are increasing rapidly. Hence, it is important to provide effective and cost-effective treatments.[10] Patients with CLBP are often unsatisfied with conventional medical treatment [11] and seek complementary and alternative therapies, such as massage, acupressure, panchkarma, and mind-body techniques.[12,13] Mind-body techniques, such as yoga, tai chi, sensory awareness, body awareness therapy, and breath therapy are said to help patients with low back pain by enhancing body awareness.[14,15]
Complementary and alternative medicine (CAM) is commonly used to treat back pain, but little is known about factors associated with the improvement.[16] Using a nationally representative survey, analyses documented that the majority of respondents who used CAM for back pain perceived great benefit.[16] Back pain is the second most common reason for which patients seek ambulatory medical care in the United States of America. CAM is used by 40 percent to 60 percent of the population every year, and back pain is the most common medical condition for which people use CAM.[16]

3. Summary of randomized controlled trials (RCT’s) which suggest the management and prevention of CLBP through yoga

Yoga plays a significant role in enhancing one’s physical as well as psychological health. Recent research also suggests that yoga is effective for dealing with many chronic health conditions such as cardiovascular disease,[17] diabetes,[18] cancer,[19] anxiety and stress,[20] migraine,[21] musculoskeletal discomfort & motor functions [22] and chronic low back pain.[23] Many CLBP patients seek relief using complementary therapies such as yoga.[24,25] The results of the following RCTs indicate that yoga may be an effective treatment for CLBP. The strongest and most consistent evidence emerged for the short-term benefits of yoga on functional disability.[26] Iyengar yoga was also found to be beneficial for the management of chronic low back pain.[5,27]

Randomized controlled trials have demonstrated that yoga is an effective treatment for reducing pain and improving functions in adult with chronic low back pain.[28] Based on the available researches, it appears that yoga is the most effective nonphysician-directed treatment approach to nonspecific low back pain when comparing it with the other CAM methods.[29]

In a study, 74 participants ages ranged between 25 and 64 years were randomized equally into a yoga and control group.[30] Yoga group received one 50 minute Dru Yoga session (including activation exercise, energy block release movements, postures and relaxation) each week for 8 weeks and a 20 minutes DVD for home practice while control group received no intervention. In comparison to the control group, the yoga group reported significant reduction in perceived stress and back pain, and a substantial improvement in psychological well-being. In a pilot randomized controlled trial, *Hatha* yoga was found more effective than usual care.[31] 30 adults (ages between 18 and 64 years) with moderate to severe chronic low back pain were randomized into a standardized 12-week protocol of *hatha* yoga classes and a usual care waitlist control group. Yoga participants had statistically significant greater reduction in pain intensity and pain medication use at 12 weeks compared to individuals receiving usual care only.

In another randomized trials, yoga therapy was found more beneficial. 228 adults with chronic low back pain were randomized to 12 weekly classes of yoga (92 patients) or conventional stretching exercises (91 patients) or a self-care book (45 patients).[32] A series of 12 standardized, weekly 75-minute yoga and stretching classes, were held in group health facilities. Participants were asked to practice 20 minutes on non class days and were given handouts and CDs (yoga) or DVDs (stretching) to assist in this. Each class included breathing exercises, 5 to 11 postures (lasting approximately 45-50 minutes), and guided deep relaxation. Here yoga classes were found more effective than a self-care book, but not more effective than stretching classes, in improving function and reducing symptoms due to chronic low back pain, with benefits lasting at least several months.

101 adults between 20 and 64 years with chronic low back pain were randomized in three groups that are yoga, exercise and self-care book to determine whether yoga is more effective than conventional therapeutic exercise or a self-care book for patients with chronic low back pain.[33] 12-week sessions (75 minutes per classes) of vini *yoga* or conventional therapeutic exercise classes or a self-care book were provided as the intervention to the respective group. Back-related function in the yoga group was found superior to the book and exercise groups at 12 weeks.

313 adults having ages between 18 and 65 years with chronic or recurrent low back pain were recruited for a randomized controlled trial to compare the effectiveness of yoga (*n=156*) and usual care (*n=157*).[34] All participants received a back pain education booklet and the intervention group was offered a 12 class, gradually progressing yoga program over 3 months (twelve 75-minutes classes, 1 class per week). The yoga group had better back function at 3, 6, and 12 months than the usual care group. Two participants out of the 157 usual care participants and 12 out of the 156 yoga participants reported an adverse event that is in terms of increased pain.

To evaluate selected yogic procedures on individuals with low back pain, twelve patients were randomly divided into two groups, yoga and control group.[35] Yogic intervention revealed 79 percent relief in both subjective and objective parameters. In a matched case-control study, magnetic resonance imaging showed that the group of long-term practitioners of yoga (with teaching experience of more than 10 years) had significantly less degenerative disc disease than a matched control group.[36] In a randomized dosing trial, 12 weeks of once-weekly or twice-weekly yoga classes were found similarly effective for predominantly low income minority adults with moderate to severe chronic low back pain.[28]

In a study, one week of a residential intensive yoga-based lifestyle program reduced pain related disability and improved spinal flexibility (in terms of spinal flexion, spinal extension, right lateral flexion and left lateral flexion) in patients with CLBP better than a physical exercise in 80 patients.[37] In another study 80 patients (ages between 18 and 60 years) with chronic low back pain were randomized into two groups (40 in each).[38] The yoga group practiced a specific module for CLBP (residential short term intensive yoga program) comprising of *asanas* (physical postures), *pranayama* (breathing practices), meditation and lectures on yoga philosophy while the control group practiced physical therapy exercises. Quality of life and spinal flexibility was found better in the yoga group than physical therapy
exercises. Spinal flexibility was found better after LSP (laghu shankha prakashalana), a yogic colon cleansing technique than BST (Back pain special technique) sessions in a self as control study on 40 in-patients between 25 and 70 years with CLBP.[39]

Psychological distress such as anxiety, depression, and somatization were found more prevalent in LBP patients (ages 15-65 years) compared to patients without LBP in a cross-sectional survey study.[40] Seven days intensive residential yoga program also reduced pain, anxiety, depression and improves spinal mobility in patients with CLBP than physiotherapy exercises.[41]

4. Mechanisms underlying the effects of yoga

Yoga reduces chronic spinal pain, one reason might be that the stretching and positioning of the spine that occur during yoga exercises decrease the gradual disc degeneration that occurs with age. It might also be because the decreased weight bearing during yoga practice lessens the stress on the spine. Yoga may benefit back pain patients because it involves exercise or because of its effects on mental focus. Yoga includes physical movements, but it is a complex intervention involving other components such as specialized use of the breath and relaxation.[42] Mind-body techniques, such as yoga, tai chi, sensory awareness, body awareness therapy and breath therapy are said to help patients with low back pain by enhancing body awareness.[14,15] Yoga techniques involving slow body movements followed by practices of deep relaxation are useful in maintaining the strength and flexibility of the spine.[6] Deep relaxation is a powerful mind-body technique that works on the mental level by reducing agitation and quieting the mind, which in turn, reduces activity in the sympathetic nervous system while activating the parasympathetic system.[2]

5. Conclusion

After reviewing all the randomized controlled trials on yoga for chronic low back pain, it can be concluded that practice of yoga in expert supervision is an effective mind-body medicine that can help in pain and stress reduction. Apart from this, regular and long term practice of yoga with general precautions provides better psychological well-being and quality of life and that can definitely minimize the occurrence of low back pain.

References


