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EFFICACY OF YOGIC INTERVENTIONS IN THE MANAGEMENT OF CERVICAL SPONDYLOSIS A CLINICAL REVIEW

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ABSTRACT

Cervical spondylosis is a common degenerative disorder of the cervical spine characterized by progressive intervertebral disc degeneration, osteophyte formation, neck pain, and functional limitations. Its prevalence has increased significantly due to sedentary lifestyles, poor posture, and occupational strain. Conventional management strategies, including pharmacological treatment, physiotherapy, and surgical intervention in severe cases, primarily provide symptomatic relief and may be associated with side effects or recurrence. Therefore, there is a growing need for safe and holistic therapeutic approaches. Yoga, an ancient mind–body discipline integrating physical postures (asanas), breathing techniques (pranayama), and relaxation practices, has emerged as a promising complementary intervention for musculoskeletal disorders. This review aims to evaluate the clinical efficacy of yogic interventions in the management of cervical spondylosis. Evidence from existing clinical studies indicates that yoga significantly reduces pain intensity, improves cervical range of motion, enhances muscular strength, and promotes psychological well-being.

KEYWORDS: Cervical spondylosis, Yoga therapy, Musculoskeletal disorders, Rehabilitation.

1. INTRODUCTION

Cervical spondylosis is a degenerative condition of the cervical spine characterized by age-related and lifestyle-associated structural changes. It involves progressive intervertebral disc degeneration, osteophyte formation, and reduction of intervertebral space, which may result in pain, stiffness, and neurological manifestations. The incidence of cervical spondylosis has shown a marked increase in recent years, particularly among individuals with sedentary lifestyles, prolonged computer use, and poor ergonomic habits. Clinically, patients commonly present with cervical pain, restricted range of motion, and radiating symptoms to the upper extremities; in advanced cases, nerve root compression may lead to significant neurological deficits. Conventional management approaches include non-steroidal anti-inflammatory drugs (NSAIDs), physiotherapeutic interventions, and surgical procedures in severe conditions. However, these strategies are primarily symptomatic and often fail to address underlying functional, postural, and psychosomatic components of the disorder. Yoga, as an integrative mind–body intervention, encompasses physical postures, controlled breathing, and relaxation techniques, targeting both physiological and psychological dimensions of health. It has emerged as a promising complementary approach in the management of musculoskeletal disorders. The present review aims to evaluate the clinical efficacy of yogic interventions in the management of cervical spondylosis.

2. METHODOLOGY

A narrative review of literature was conducted using electronic databases such as PubMed, Scopus, and Google Scholar. Relevant studies published between 2000 and 2025 were included, focusing on clinical trials, randomized controlled trials, and observational studies evaluating the effects of yoga in cervical spondylosis. Keywords used included “cervical spondylosis,” “yoga therapy,” “neck pain,” and “rehabilitation.”

3. OVERVIEW OF CERVICAL SPONDYLOSIS

3.1 Anatomy of Cervical Spine

The cervical spine, forming the uppermost part of the vertebral column, consists of seven vertebrae (C1–C7) and is responsible for supporting the head, enabling a wide range of movements, and protecting the spinal cord and neurovascular structures.[1] It is anatomically divided into the upper cervical spine (C1–C2) and lower cervical spine (C3–C7). The atlas (C1) is a ring-shaped vertebra that supports the skull and facilitates flexion–extension at the atlanto-occipital joint, while the axis (C2), with its odontoid process (dens), permits rotational

movement at the atlanto-axial joint (Moore et al., 2018). These specialized vertebrae provide both mobility and stability. The lower cervical vertebrae (C3–C7) exhibit typical structural features and are separated by intervertebral discs, which function in shock absorption and spinal flexibility, Degeneration of these discs is a primary factor in cervical spondylosis.[2]

3.2 Pathophysiology

Cervical spondylosis is primarily a degenerative condition resulting from age-related and mechanical changes affecting the intervertebral discs, vertebrae, and surrounding soft tissues. The pathological process typically begins with disc dehydration and degeneration, characterized by a loss of water content and proteoglycans within the nucleus pulposus, leading to reduced disc height and elasticity.[3] This structural deterioration compromises the load-bearing capacity of the spine. Cervical spondylosis is a progressive degenerative disorder involving structural and functional alterations of the intervertebral discs, vertebrae, ligaments, and neural elements. These changes develop gradually due to aging, repetitive mechanical stress, and postural strain, ultimately leading to pain and neurological complications**.**[4]

Disc Dehydration and Degeneration

Disc dehydration and degeneration represent the earliest and most critical changes in the pathophysiology of cervical spondylosis. With advancing age and mechanical stress, the intervertebral discs undergo a gradual loss of water content and proteoglycans within the nucleus pulposus, leading to reduced disc height, decreased elasticity, and impaired shock-absorbing capacity.[5] These biochemical and structural alterations weaken the annulus fibrosus, making it prone to fissures and bulging. As a result, normal spinal biomechanics are disrupted, increasing mechanical load on adjacent vertebral structures and accelerating further degenerative changes. This process plays a central role in the development of cervical pain, stiffness, and functional limitation.

Osteophyte Formation

Osteophyte formation is a key feature in the progression of cervical spondylosis, arising as a compensatory response to intervertebral disc degeneration and increased mechanical stress. These bony outgrowths, commonly known as bone spurs, develop along the margins of vertebral bodies and facet joints in an attempt to enhance spinal stability. The formation of osteophytes may lead to encroachment upon adjacent neural structures, contributing to narrowing of the intervertebral foramina and restriction of cervical mobility. In advanced

stages, this can result in nerve root irritation and associated clinical symptoms.[6]

Ligament Thickening

Ligament thickening is a significant degenerative change observed in cervical spondylosis, characterized by hypertrophy of spinal ligaments, particularly the ligamentum flavum and the posterior longitudinal ligament. These alterations occur as an adaptive response to chronic mechanical stress and aging-related degeneration. The thickened ligaments contribute to a reduction in the diameter of the spinal canal and decreased spinal flexibility. Consequently, this may increase pressure on adjacent neural structures, aggravating symptoms such as pain, stiffness, and restricted cervical movement.[7]

3.3 Signs and Symptoms

Neck pain and stiffness

Neck pain and stiffness are common symptoms of cervical spondylosis caused by degenerative changes in the intervertebral discs and joints. These changes lead to muscle spasm, inflammation, and reduced flexibility, resulting in discomfort and restricted neck movement.

Reduced range of motion

Reduced range of motion means your neck doesn't move as freely as it should. Due to stiffness and wear-and-tear in the joints and discs, it becomes difficult or painful to turn, bend, or tilt your neck during daily activities.

Radiating pain

Radiating pain starts in the neck and spreads to the shoulders, arms, or hands. It happens when a nerve in the neck gets compressed or irritated. The pain may feel sharp, burning, or tingling and can affect daily activities.

4. RISK FACTORS

Ageing: Natural wear and tear of discs and joints increases with age.

Poor Posture: Long sitting, mobile use, and wrong neck positions strain the cervical spine.

Sedentary Lifestyle: Lack of physical activity weakens neck muscles.

Occupational Strain: Jobs involving prolonged sitting, computer work, or repetitive neck movements.

Previous Injury: Past neck injuries can accelerate degeneration.

Genetic Factors: Family history may increase susceptibility.

Obesity: Excess weight adds stress on the spin**e**

5. CONVENTIONAL MANAGEMENT

Pharmacotherapy (NSAIDs, Muscle Relaxants): Pharmacotherapy is commonly used in the management of cervical spondylosis to alleviate pain and muscle spasm. Non-steroidal anti-inflammatory drugs (NSAIDs) help reduce inflammation and provide analgesic effects, thereby relieving neck pain. Muscle relaxants are prescribed to decrease muscle spasm and improve mobility by reducing muscle tension in the cervical region. Although these medications are effective for short-term symptom relief, they do not address the underlying degenerative changes and may be associated with side effects such as gastrointestinal irritation, drowsiness, and dizziness when used for prolonged periods.[8-9]

Physiotherapy: Physiotherapy plays an important role in the conservative management of cervical spondylosis by improving mobility, reducing pain, and enhancing muscular strength. It includes therapeutic exercises, stretching, posture correction, and manual therapy techniques that help restore normal cervical function. Physiotherapy also focuses on strengthening neck and shoulder muscles, which supports spinal stability and prevents further degeneration. Regular physiotherapy has been shown to improve range of motion and reduce disability in patients with chronic neck pain.[10]

Surgical intervention (advanced cases): Surgical intervention is considered in advanced cases of cervical spondylosis, particularly when there is significant nerve root or spinal cord compression that does not respond to conservative treatments. The primary objective of surgery is to relieve pressure on neural structures and stabilize the cervical spine. Common procedures include discectomy, laminectomy, and spinal fusion. Although surgery can provide effective symptom relief and improve neurological function, it carries potential risks, requires postoperative recovery, and is generally reserved for patients with severe or progressive symptoms.[11-12]

Limitations: Conventional management of cervical spondylosis presents several limitations. These approaches generally provide temporary symptomatic relief and do not effectively address the underlying degenerative changes of the cervical spine. Prolonged use of medications such as NSAIDs and muscle relaxants may lead to adverse effects, including gastrointestinal complications, dizziness, and sedation. Furthermore, while surgical

intervention can be beneficial in severe cases, it is often associated with high costs, potential complications, and the need for extended rehabilitation. These limitations emphasize the necessity for alternative and holistic approaches to long-term management.[13–14]

Temporary relief: Treatments for cervical spondylosis only give short-term relief from pain and stiffness. Medicines and physiotherapy can make you feel better for some time, but they do not fix the main problem in the spine. Because of this, the symptoms often come back after some time, and treatment may be needed again.

Side effects: Some treatments, especially medicines, can cause unwanted side effects. These may include stomach problems, dizziness, sleepiness, or weakness. Using medicines for a long time can sometimes create more health issues, making them not suitable for everyone.

High cost: Treating cervical spondylosis can be expensive, especially if it continues for a long time or requires surgery. Costs can include medicines, regular physiotherapy sessions, tests, and hospital expenses. Over time, this can become a financial burden, making treatment difficult to afford for many people.

6. Yoga in Cervical Spondylosis: Evidence from Previous Studies

An increasing number of studies indicate that yoga is an effective complementary approach for managing cervical spondylosis and chronic neck pain. Yogic practices such as asanas, pranayama, and relaxation techniques have been found to enhance both physical health and psychological well-being in individuals with these conditions. A randomized trial comparing yoga with conventional home-based exercise and found that yoga was more effective in reducing pain and disability, along with improving functional status in patients with chronic nonspecific neck pain.[15] The effects of yogic practices on individuals with cervical spondylosis and reported significant reductions in pain and stiffness following a short-term intervention. The study highlighted that yoga, when combined with conventional treatment, produced better outcomes than conventional therapy alone.[16] yoga significantly reduces neck pain intensity, enhances cervical range of motion, and decreases disability levels.[17]

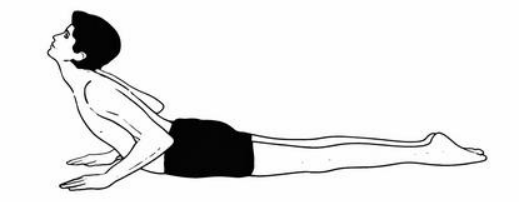
7. YOGIC INTERVENTIONS

7.1 Asana

Asanas (yogic postures) play a significant role in the management of cervical spondylosis by improving flexibility, strengthening muscles, correcting posture, and reducing pain and

stiffness. Regular practice of specific asanas helps relieve pressure on the cervical spine, enhance blood circulation, and promote relaxation.

Bhujangasana (Cobra Pose)

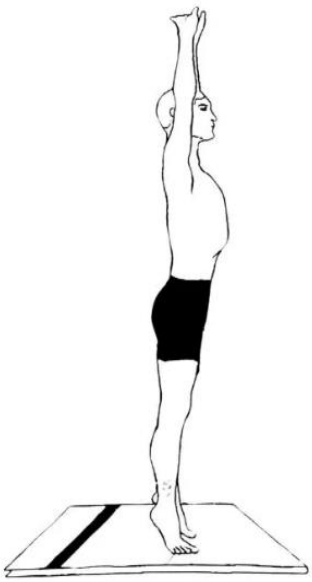


Bhujangasana strengthens the back and neck muscles while improving spinal flexibility. It stretches the cervical region, reduces stiffness, and supports better posture.

Makarasana

Makarasana is a deep relaxation posture that releases tension from the neck, shoulders, and back. It helps reduce muscle stiffness and promotes relaxation.

Tadasana



Tadasana improves posture and body alignment. It strengthens the spine and neck muscles

and reduces strain caused by poor posture.

Ardha Matsyendrasana

This asana enhances spinal flexibility and improves circulation. It helps reduce stiffness and discomfort in the neck and back.

Uttan Mandukasana

Uttan Mandukasana stretches the chest, shoulders, and upper back, helping to relieve tension in the cervical region. It improves posture and enhances flexibility of the spine.

Gomukhasana

Gomukhasana is beneficial for stretching the shoulders, chest, and upper back muscles. It helps reduce stiffness in the neck and improves joint mobility and posture.

Ustrasana

Ustrasana provides a deep stretch to the front of the body, including the neck and chest. It improves spinal flexibility, opens up the shoulders, and helps relieve cervical stiffness.

Marjariasana

Marjariasana improves flexibility of the spine and promotes gentle movement of the neck and back. It helps relieve tension, enhances circulation, and reduces stiffness.

7.2 Pranayama

Pranayama (breathing techniques) plays an important role in managing cervical spondylosis by reducing stress, relaxing muscles, and improving oxygen supply to the body. Regular practice helps calm the mind, decrease muscle tension in the neck and shoulders, and improve overall well-being. It also supports better posture and enhances the body's natural healing process.

Anulom Vilom

This technique helps balance the nervous system and reduces stress. It promotes relaxation and improves blood circulation, which can help reduce neck tension.

Bhramari (Humming Bee Breathing)

Bhramari helps calm the mind and reduce anxiety. The gentle vibration created during breathing relaxes the muscles of the neck and shoulders.

Nadi Shodhana (Purification Breathing)

This pranayama improves oxygen flow and helps in relaxing both the body and mind. It reduces stress and supports better neuromuscular coordination.

7.3 Relaxation Techniques

Relaxation techniques are important in managing cervical spondylosis as they help reduce stress, relax tight muscles, and promote overall healing. They calm the mind and release tension from the neck and shoulders, improving comfort and well-being.

Shavasana

Shavasana is a simple resting posture where the body is completely relaxed. It helps reduce stress, calm the nervous system, and release tension from the neck and back.

Yoga Nidra

Yoga Nidra is a guided relaxation practice that brings deep mental and physical relaxation. It helps reduce anxiety, improves sleep, and relaxes the muscles, which can ease neck pain and stiffness.

8. CLINICAL EVIDENCE

Clinical evidence from randomized controlled trials, clinical studies, and meta-analyses supports the effectiveness of yoga in the management of cervical spondylosis and chronic neck pain. These studies consistently report improvements in pain, mobility, functional ability, and overall quality of life.

S.No.	Study (Author, Year)	Study Type	Key Outcomes
1.	Michalsen et al. (2012)	Randomized Controlled Trial	Significant reduction in neck pain;improved functional ability
2.	Cramer et al. (2013)	Randomized Controlled Trial	Improved cervical mobility; reduced pain intensity
3.	Li et al. (2019)	Meta-analysis	Reduced pain; increased range of motion; decreased disability
4.	Jain et al. (2021)	Clinical Study	Reduced pain and stiffness; better daily functioning
5.	Cramer et al. (2017)	Systematic Review & Meta-analysis	Improved quality of life and functional outcomes

FUTURE RESEARCH DIRECTIONS

Further large-scale randomized controlled trials with standardized yoga protocols and long-term follow-up are required to establish clinical efficacy.

DISCUSSION

The findings suggest that yoga is an effective complementary therapy for cervical spondylosis. It addresses both physical and psychological aspects of the disorder and provides long-term benefits compared to conventional therapies.

CONCLUSION

Yoga is a safe, cost-effective, and holistic intervention for cervical spondylosis. It improves pain, mobility, and quality of life and can be effectively integrated into conventional management strategies.

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