

Secondary Effects of Yoga and Pranayama in Dentistry: A Narrative Review

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ABSTRACT

Yoga is an art that includes physical, mental, and spiritual activities for a healthy mind and body. Nowadays, because of modern dentistry, we dentists face many occupational health issues related to the neck, shoulder, and back. The “asana” and the “pranayama” are part of the yoga activity. Asana helps dental professionals to recover from posture-related problems like musculoskeletal pain. Daily practice of yoga does not just help to decrease the stress and anxiety of the dentist and dental patient but also improves the immunity of the body. The people who are more stressed give less care to their teeth, gums, and oral health. Yoga reduces stress, improves the oxidative status of the body, increases immunity, and reduces gingival inflammation. Yoga improves the lifestyle of the person toward nature. Yoga helps dentists to give good posture and flexibility to relieve musculoskeletal pain. Yoga and pranayama help in the maintenance of oral hygiene, reduction of gingival inflammation, and prevention of dental diseases. Yoga and pranayama help us with our day-to-day muscular discomfort and pain. Yoga is easy and more comfortable than other muscle-strengthening exercises. Yoga helps to get the best from our personal and professional life. This review article focuses on the importance of yoga and pranayama for the dentist, dental diseases, and oral health.

Keywords: Dental stress, Mental health, Musculoskeletal disorder, Oral health

INTRODUCTION

Yoga comes from the Sanskrit word ‘yuj’ which means to join or ‘to unite’. Yoga is a harmony between mind and body. It is the union of individual consciousness with universal consciousness. The purpose of yoga and pranayama is to merge with reality. The combination of these two yogic practices leads to perfection and pure consciousness [1]. Yoga is an ancient art, originating in India for more than 3000 years. Ashtanga yoga is Patanjali’s classification of yoga. Patanjali defined this yoga in eight limbs. The first and second limbs are yamas (ethical discipline) and niyama (individual discipline). The third and fourth are asana (postures) and pranayama (breathing activities). The fifth and sixth are pratyahara (sense withdrawal) and dharana (concentration). The seventh and eighth are dhyana (meditation) and samadhi (ananda, bliss). Yoga actually originated in India, but western countries also adopted yoga in the late 19th and early 20th centuries. They strongly emphasise meditation and self-reflection. Nowadays, western yoga focuses on physical health and fitness more than inner peace and the ancient roots of yoga [2]. Yoga is beneficial for excellent posture. For the body and mind to be strong, flexible, and healthy, yoga and pranayama are more beneficial. The inclusion of yogic breathing in the stress reduction protocol of the dental student curriculum could reduce dental students’ overall anxiety, enhance their academic functioning, improve their technical performance, decrease their patients’ anxiety, and ultimately benefit all aspects of their academic and professional careers [3].

A dentist may face many mental, physical, and emotional hardships related to dental patients and dental treatment. Dental professionals have to deal with problems like cervical spondylosis, and tendonitis. Tendonitis in the dentist’s finger can occur from repeated straining due to dental treatment. Sometimes, the dentist feels pain in the lower legs due to standing. The key benefit of yoga is a greater perception of life it leads to a change of habits and behaviours and significantly improves the quality of life. Dentists can get many benefits from yoga that will result in quite positive changes in practice, interpersonal relationships, and the world [4,5].

EFFECT OF YOGA ON DENTIST’S HEALTH

Overall Quality of Life

A study on dental students in the USA concluded that a 10-week yoga protocol improves the overall well-being of the students. Various asanas help the flexibility and posture of dentists. Regular practice of asanas reduces pain in individuals’ back, neck, shoulder, and joints [6]. Surya namaskar (sun salutation) is the most effective yogic activity for whole-body flexibility, bhujangasana (cobra pose) makes the spine flexible, padmasana (lotus pose) helps to erect the spinal cord and vajrasana helps to reduce pain in the lower legs [7]. There are other asanas like trikonasana (triangle pose), setubandhasana (bridge pose), and balasana (child pose) that are effective in musculoskeletal pain. Yoga with breathing exercises strengthens and flexes individual muscles, helps in balancing the body, and focusing the mind. This leads to enhancing the ability to perform every work and task with more energy and even peaceful sleep [8]. Yogic exercise with pranayama keeps your mind and body cool and calm in every situation-samatvam yoga uchyate (be equal-minded in both success and failure)- Bhagavad Gita 2/50.

Musculoskeletal Pain

According to Shapiro D et al., and Wallace RK, yoga reduces musculoskeletal pain of dental students by increasing the capacity to sit in one place for a long duration and decreasing stress on the eyes and mind while working on the laptop and keyboards for a long time [9,10]. Yoga helps students and professionals by keeping them normal with uncooperative teammates, patients, and problems that are related to their jobs [11]. Chronic dentistry leads to injury to muscles, ligaments, tendons, nerves, bones, and joints, and pain in the neck, shoulder, back, arm, finger, wrist, and hands which leads to musculoskeletal disorders [12]. One of the prior studies between dentist, dental hygienist, and dental students suggest that back and neck pain was more common in dentists and hand and wrist pain were more common in dental hygienists [13]. According to Deolia SG et al., yoga benefits in reducing backaches and headaches among dentists [14]. Daily practice of yoga and pranayama is helpful for dental students and professionals for their pain-free and stress-free lifestyle [15].

Stress

When a person is under more stress, maintaining excellent dental health is less important to him [16]. Yoga can aid with mental balance, boost good emotions, and improve psychological conditions for recognising and managing stress and negative emotions [17]. For regular working adults, twice-weekly yoga sessions may lower stress and enhance psychological wellness. It offers evidence that people who deal with daily workplace stressors but are otherwise healthy and functional can benefit from easily available yoga [18]. After 12 sessions of consistent hatha yoga practice, depression, anxiety, and stress in women considerably decreased, according to Shohani M et al., [19].

EFFECT OF YOGA ON ORAL HEALTH

Bruxism

We can manage our stress and preserve good oral and general health by practicing yoga. Some people grind their teeth (a condition known as bruxism) when they are under stress, which results in temporomandibular joint problems, fractured fillings in some teeth, and hairline fractures. Teeth microfracture causes nerve injury. The patient's teeth are sensitive to both heat and cold due to nerve damage. Chronic tooth grinding causes gingival pockets to form, gum recession, and tooth loosening. Jaw discomfort and headaches are caused by bruxism. Thus, stress is reduced and people achieve mental and physical wellness via consistent yoga and breathing practice [9]. In 2008, the American Academy of Orofacial Pain described bruxism as a daytime or night-time parafunctional behaviour that involves unintentional teeth bracing, grinding, or clenching [20]. A recent study found that stress is a helpful indication and plays a significant part in the pathophysiology of bruxism. Bruxism can lead to a number of dental issues, including worn-down tooth enamel, chipped or broken teeth, damaged cheeks, jaw pain, and flat or uneven teeth [21].

Lichen Planus

A psychosomatic illness is lichen planus. High levels of worry, a poor quality of life, and frequent psychiatric symptoms will all contribute to the worsening of lichen planus [22]. According to Panta P et al., mind-body interventions like meditation can be a promising technique to prevent and/or reverse oral lichen planus and to effectively rehabilitate suffering individuals because oral lichen planus is accelerated by stress, anxiety, depression, and sleep issues [23]. Yoga is a traditional method of healing, exercise, and relaxation. It adopts a primary focus on prevention or maintaining one's health via everyday practice as a healing strategy [24]. According to Garcia-Sesnich JN et al., three months of kundalini yoga practice had an immediate impact on salivary cortisol levels and perceived stress [25].

Salivary Flow

A study by Bhattacharya S et al., found that the oral cavity's bacterial population rises when salivary flow is reduced. A dry mouth is a perfect environment for bacteria to flourish. As a result, halitosis, plaque build-up, tooth decay, and gum disorders occur [26]. By stimulating the glands in your oral cavity, some pranayama, such as sitali and sitkari (cooling breath), encourage excessive salivation, according to research by Joshi KS and Iyenger BK [27,28]. According to Balasubramanian S et al., saliva is a known source of Nerve Growth Factor (NGF) and coincidentally, relaxing techniques like yoga make people salivate more. The respiratory, neurological, immunological, and digestive systems are all controlled by salivary secretion [29].

Inflammation and Diseases

According to Shete SU et al., and Raison CL et al., proinflammatory cytokines including 1L-1, IL-6, TNF α , and C-reactive Protein (CRP)

contribute significantly to the evolution of diabetes mellitus, hypertension, coronary artery disease, and periodontal disorders [30,31]. There is also risk of developing cancer, including oral cancer, due to persistent inflammation. According to Aggarwal BB et al., and Rajbhoj PH et al., yoga and breathing techniques have an impact on inflammatory cytokines and protein production in healthy individuals, which changes cholesterol, Low Density Lipoprotein (LDL), 1L- α , and CRP levels [32,33]. Yoga boosts immunity while lowering oxidative stress. This helps to enhance periodontal health by reducing chronic gingival and periodontal inflammation [34].

Orofacial Pain

The care of orofacial pain disorders is a crucial and essential component of the oral medicine speciality. Today, people all over the world are looking for alternative solutions because of the rising costs of medications and the number of negative side-effects related to modern medicines. Hence, a study by Bhalla K et al., involved 60 patients who were randomly assigned to one of three Groups- A, B, or C, each of which had 20 patients (10 with trigeminal neuralgia and 10 with myofascial pain). For each patient in Group-A, conventional medications were prescribed. In Group-B, holistic practices (yoga and naturopathy) were combined with traditional pharmacological therapy, and in Group-C, solely holistic practices were used. They came to the conclusion that using a holistic approach can be helpful in treating individuals with chronic orofacial pain, since it reduces the possibility of side-effects from using muscle relaxants and anticonvulsants on a long-term basis [35]. A case study was done by Atheesh Kumar M et al., four identical cases of dental abscesses were treated independently by two yoga prana vidya healers and analysed using the case study approach. It was found that all four cases saw the total resolution of tooth infection and discomfort between 7 to 15 days of healing, providing the patients with a great deal of relief. Yoga prana vidya combines the science of breathing with yoga, healing, meditation, and other practices to offer a comprehensive approach to wellness. It takes into account one's physical, emotional, mental, and spiritual well-being. It appears that yoga prana vidhya healing techniques were effective in curing an abscessed tooth's infection and pain without the need for medications or their negative side-effects in all four reported cases. The healers individually managed their individual cases utilising the prescribed yoga prana vidhya procedures, and this attests to the consistency of the protocols. To eliminate the decay mechanically, a dentist will need to perform more dental work. As a result, it is advised that yoga prana vidhya routines be utilised as a complementary therapy for dental patients in order to relieve infection and discomfort without the use of pharmaceuticals as a first line of defence, allowing a dentist to perform more work on the abscessed tooth [36].

Orofacial Development

The facial musculature has important roles in performing a variety of orofacial functions such as speech, mastication, and swallowing. Exercises associated with the function of the muscles of the face and lips can be called orofacial myofunctional exercises. These exercises, if employed at an early age can help to reduce the severity of dental malocclusion and management of deleterious oral habits. In addition, there can be an improvement in the muscle tone and speech of the patient that leads to harmonious orofacial functioning [37]. Various components of yoga, including postures and breathing exercises can be effectively used in myofunctional therapies, which would help in proper orofacial development [35].

BENEFITS OF PRANAYAMA

Pranayama is free from side-effects and is a simple behavioural process comfortable for virtually any medical condition. It is acceptable that in the future, healthcare providers will advise and prescribe pranayama for specific conditions [38]. Pranayama helps

in controlling ageing. With the practice of yoga and pranayama, with patience, regularity, and self-realisation, one should be able to reduce laziness, anger, delusion, and desire to be different or better than others [39]. In pranayama, we take more oxygen than regular breathing. More oxygen burns fat. Kapalbhathi pranayama involves abdominal muscle contraction with forceful exhalation and natural inhalation. This is responsible for the effect of Kapalbhathi on fat metabolism. This causes an increase in basal metabolic rate and because of this, there is an increase in calorie consumption and a decrease in fat deposition so a reduction in weight [40]. In pranayama (like bhastrika) lungs expand and become healthier and more functional [41]. According to Posadzki P et al., and Kwong JS et al., breathing techniques help to regulate blood pressure and heart diseases [42,43]. Pranayama makes teeth and gums healthy. Sudarshan kriya pranayama can improve the salivary flow, which in turn can decrease plaque deposition and enhance oral hygiene [44]. Yoga and pranayama play a positive effect on periodontitis by decreasing stress levels. It has also shown an impact on poor oral hygiene, dietary intake, smoking, change in salivary flow, and components, thereby decreasing the risk for periodontal disease [45]. Yoga stimulates phagocytosis and regulates the formation of fibroblasts and epithelial cells thereby enhancing periodontal health [46]. By pranayama, the mind becomes calmer, focused, and stable. Pranayama gives a happy physical, mental, and spiritual state to the individual [47]. Singh S et al., and Bhavanani AB said that shitali pranayama and kapalbhathi pranayama and lion pose (simhasana) are some breathing techniques that help to cure halitosis [48,49].

Other Benefits of Yoga in Dental Patients

Aphthous ulcers, Myofascial Pain Dysfunction Syndrome (MPDS), oral lichen planus, xerostomia, bruxism, and burning mouth syndrome are among the disorders linked to stress [50]. Yoga and breathing exercises are helpful in these circumstances. Eating irregularly might cause dental erosion and stomach refluxes [51]. Yoga and pranayama are more beneficial for MPDS patients, according to a study by Khan AA et al., [52]. In this study, experimental A group (conventional, non invasive treatment with raj-yoga meditation therapy and pranayama) proved to be effective immediately as well for a long period as the conventional therapy took care of acute stage pain and raj-yoga meditation therapy and pranayama were directed toward alleviation of the underlying predisposing stress and anxiety that resulted in prolonged relief from pain. Raj-yoga meditation (raj means king in Sanskrit. It is considered to be the practice that is inclusive of all forms and styles of yoga with meditation). Compared to other modalities used alone, pranayama in conjunction with conventional, non invasive therapeutic modalities demonstrated promising effects in MPDS patients [52]. As was already mentioned, various breathing exercises can help prevent dental cavities and halitosis. Various yoga poses, such as forward bends, inverted poses, and some twists, help dental patients produce more saliva [53]. Some benefits of yoga include building muscle strength, improving posture, preventing cartilage and joint breakdown, increasing blood flow, draining lymph and boost immunity, lower blood sugar, maintaining the nervous system, giving peace of mind, and easing your pain [54]. Dental patients' responses to rhythmic breathing were examined by Singh K et al., [55]. The conclusion was that yoga and breathing activities assist in maintaining oral cleanliness, gingival index, and gingival haemorrhage, which helps to eliminate calcification and debris [55]. Daily yoga practice lowered gingival pocket depth, plaque index, and bleeding during probing, according to one study on periodontal illnesses [56]. Regular pranayama practices and meditation aid in relaxation. This aids in reducing the desire for alcohol and smoking. It may bring about morbidity and death [57]. Pranayama exercises like nadishodhan and anulom vilom (alternate nostril breathing) are useful for breaking the habit of smoking [58]. Yoga and pranayama strengthen the body and mind, which helps patients manage their withdrawal symptoms. As earlier said, yoga and pranayama

help reduce stress and anxiety in dental patients. This leads to making patients cooperative. One of the studies by Kakodkar PV et al., reported that 10 minutes of chairside yoga sessions before extraction reduces the anxiety level of dental patients [59].

Another study found that doing some breathing yoga for two to three minutes before giving a patient local anaesthetic decreased the patient's anxiety and the quantity of local anaesthesia needed [60]. A fairly common oral symptom of Gastroesophageal Reflux Disease (GERD) is dental erosion. The practice of yoga may aid in preventing this ailment [61]. Yoga practice over time increased pain tolerance. Compared to non yoga practitioners, yoga practitioners were able to withstand discomfort more than twice as well [62]. Yoga and breathing exercises are utilised to treat painful conditions. According to one study, yoga, and breathing techniques can effectively treat cancer patients' insomnia and poor sleep quality [63].

ADVERSE EFFECTS OF YOGA AND PRANAYAMA

Most all-yoga practices with breathing exercises are safe. Some are strenuous and not suitable for every person. Before considering yoga as a treatment, elderly individuals or those with mobility issues should discuss their concerns with their doctor. According to reports, there have been incidents involving hazards associated with practicing yoga. According to one of the studies, one in ten people experienced at least one chronic adverse consequence, primarily musculoskeletal symptoms [64]. A bad posture can cause everything from bone fractures to joint injuries [64]. In comparison to quiet and meditative yoga methods, vigorous versions of yoga place a greater strain on the muscles, ligaments, and joints since they combine postures into a series of motions [65]. According to some research, practicing yoga may have damaged the menisci, which is a risk factor for osteoarthritis and the disability it causes [66,67]. A case of tooth erosion was noted, in which the patient, in an effort to clean his digestive tract, vomited while still having an empty stomach as part of yoga kriya for over 12 years [68].

HOW TO DO YOGA AND PRANAYAMA

While no concrete guidelines exist regarding the frequency of practice, the more you practice the more you benefit. Yoga is a personalised practice; frequency and duration are personal questions with individual answers. Practice should happen with wisdom and should be modified to meet individual needs and goals. Individuals should practice as often as possible, especially in the beginning. The length of the induction phase will vary depending on an individual's initial level of fitness and health status. The more difficult yoga is for someone in the beginning the more their body needs it [66].

Basic Rules While Doing Yoga and Pranayama (The Ministry of Ayush) [69]

- 1) Yoga and pranayama should be practiced on an empty stomach or at least 2 to 3 hours after eating.
- 2) Wear comfortable cotton clothes while practicing yoga.
- 3) Always start your journey under the guidance of your mentor.
- 4) First begin with easy poses then go for advanced poses of yoga.
- 5) Do not try headstand (shirshasana), bakasana or kakasana or mayurasana like advanced asanas in the beginning.
- 6) Always use a yoga mat or thick bed sheet while doing yoga and pranayama.
- 7) Women should not practice some difficult and straining poses and pranayama during menstruation.
- 8) Food can be taken after one or two hours of yoga. Morning is the best time to do yoga and pranayama, as there is fresh and clean air with lots of oxygen.

- 9) To get better results, do this yogic practice daily. Breathing is very important in yoga and pranayama.
- 10) Do yoga and pranayama with a positive, peaceful, and spiritual state of mind and body. Keep harmony with the forces of nature.
- 11) Practice postures to make the body fit for long sittings for meditation. For meditation, any posture may be used, which is steady (head, neck, and chest must be aligned, leaving the natural curve in the spine), stable, motionless, and comfortable. It is achieved by relaxing attention or loosening of effort to sit in a particular posture and allowing attention to merge with the infinite [70].

CONCLUSION(S)

Stress is reduced by yoga and pranayama, which also boosts immunity and heals the body and mind. Yoga and pranayama aid in preventing dental and oral soft tissue disorders. We can stay cool and collected both emotionally and physically by doing yoga and pranayama, which will protect us from workplace dangers. In the future, medical professionals will confidently recommend particular yogic breathing techniques for particular conditions and people. Small groups will be the focus of a yoga awareness programme, and both students and other people should be inspired to incorporate pranayama and yoga into their daily lives. The key benefit of yoga and pranayama leads to positive changes in habits and behaviours and the practice of dental patients, dental students, and dental professionals. It is high time that dentists include yoga and pranayama in their daily routine to get rid of postural-related muscular discomfort and pain.

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