Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 32s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Effect Of Yoga And Meditation On Stress Related Oral Ulcers Amongst Dental Undergraduates Of A Private Dental Teaching Institution In Sangareddy District

Dr. Ramesh Kunusoth[1], Dr. Sunitha J. D[2], Dr. Shaik Mobeen*[3], Dr. Chandana Dasari[4], Dr. Guggilla Shivani[5], Dr. Ande Jahnavi[6], Asma Khanam[7]

[1]Professor And H.O.D Department of Oral And Maxillofacial Surgery MNR Dental College And Hospital Sangareddy.

[2]- Professor And H.O.D Department of Oral And Maxillofacial Pathology MNR Dental College And Hospital Sangareddy.

[3]-*Associate Professor Department of Oral Medicine And Radiology MNR Dental College And Hospital Sangareddy.

[4]-BDS Pinnamaneni Siddhartha Dental College And Hospital, Andhra Pradesh

[5]- Post Graduate Student Department of Oral And Maxillofacial Surgery MNR Dental College And Hospital Sangareddy

[6] - Post Graduate Student Department Of Oral Pathology MNR Dental College And Hospital Sangareddy

[7]- BDS Student MNR Dental College And Hospital Sangareddy

***Corresponding Author:**

Dr. Shaik Mobeen

Associate Professor Department of Oral Medicine And Radiology MNR Dental College And Hospital Sangareddy.

Cite this paper as: Dr. Ramesh Kunusoth, Dr. Sunitha J.D, Dr. Shaik Mobeen, Dr. Chandana Dasari, Dr. Guggilla Shivani,Dr.Ande Jahnavi, Asma Khanam , (2025) Effect Of Yoga And Meditation On Stress Related Oral Ulcers Amongst Dental Undergraduates Of A Private Dental Teaching Institution In Sangareddy District. *Journal of Neonatal Surgery*, 14 (32s), 7664-7673.

ABSTRACT

Background: Undergraduate dentistry students often endure significant levels of clinical and academic stress, which can lead to stress-related mouth problems, particularly recurrent aphthous ulcers. Yoga, and particularly pranayama (yogic breathing), is a well-studied non-pharmacological strategy for lowering stress and improving mental health.

Objective: To investigate how undergraduate dental students' perceptions of stress and the prevalence of stress-related mouth ulcers are affected by yoga and pranayama.

Methods: A cross-sectional interventional study was carried out at MNR Dental College and Hospital in Sangareddy. Two groups of 400 students each were created: Group B served as the control group and received materials, while Group A (intervention) received 15 days of supervised Pranayama training. Stress was measured using the Perceived Stress Scale (PSS-10). To find ulcers linked to stress, clinical oral examinations were performed. SPSS v25 was used to analyse the data, and chi-square and t-tests were used to assess statistical significance ($p < 0.05$). Clinical oral examinations were conducted to identify stress-related ulcers.

Results: Prior to the intervention, 25% of students had high levels of stress, and 32.5% of students had clinical mouth ulcers. After the intervention, Group A showed a significant reduction in both high stress levels (from 25% to 2.5%) and ulcer prevalence (from 70 to 15 instances; ↓78.6%). According to chi-square analysis, there is a strong relationship between stress and mouth ulcers ($\chi^2 = 28.67$, p 0.001), and yoga significantly reduces the incidence of both stress and ulcers.

Conclusion: Pranayama significantly reduces the incidence of stress-related mouth ulcers and dental undergraduates' feelings of stress. Students' oral health and mental resilience may be enhanced by incorporating yoga into the dental curriculum.

Keywords: Yoga, dental students, stress, mouth ulcers, pranayama, psychosomatic health, and the perceived stress scale

1. INTRODUCTION

The World Health Organization (WHO) predicts that stress-related issues will soon rank among the leading causes of

disability globally. Numerous systemic disorders, including diabetes, hypertension, and autoimmune diseases, can also be brought on by stress. Numerous pressures, including the demands of the academic curriculum, an uncertain future, and challenges with system integration, are affecting students. Students studying medicine and dentistry are known to experience exceptionally high levels of stress. This could be a contributing factor to the development of mouth ulcers.Yoga, an ancient traditional science of India, is a non-invasive and time-tested method to reduce stress and anxiety. Yoga and Pranayama helps establish "sukhasthanam," a dynamic sense of physical, mental, and spiritual well-being and it has been observed that yogic intervention can reduce anxiety. It is regarded as a holistic approach to health and is known to facilitate healing, promote a sense of calmness, and enhance well-being and self-control. Yoga produces a sense of mind–body balance in

opposition to the stress response that is generally found to exist.

A dental student's overall anxiety could be decreased, their academic functioning could be improved, their technical performance could be improved, their patients' anxiety could be reduced, and all aspects of their academic and professional careers could eventually benefit from the inclusion of yogic breathing in the stress reduction protocol of the dental student curriculum. By putting these recommendations into practice, dental students' general anxiety levels can be lowered, which will help them succeed as learners, dentists, and people who are in harmony with the environment.

Yogic intervention is proven to be extremely useful in reducing stress and anxiety in many clinical scenarios, but the literature on dental applications, more so in its incorporation in academic and clinical settings, is fewer. Undergraduates studying dentistry are regularly subjected to high levels of clinical and academic stress, which can result in a number of psychosomatic symptoms, such as recurring dental ulcers. The development of aphthous stomatitis and other ulcerative lesions is recognized to be aided by immunomodulation brought on by stress. Meditation and yoga are increasingly recognized as effective non-pharmacological stress-reduction methods. By reducing cortisol levels, regulating the autonomic nervous system, and fostering emotional stability and mental clarity, these mind

body techniques function. They are useful resources for professionals and students in high-pressure settings since regular practice has been demonstrated to increase resilience, improve sleep, and reduce perceived stress. Yoga and meditation can promote wellbeing and ward off stress-related ailments including psychological burnout and psychosomatic problems like oral ulcers in the framework of health sciences education.

Objectives:

The study was aimed to find out the effect of Yoga (Pranayama) on stress seen among dental undergraduate students.

Hypothesis:

There will be a significant difference in the level of stress among undergraduate students, before and after Yoga (Pranayama).

Methodology:

Methodology: MNR Dentistry College and Hospital in Sangareddy undergraduate dentistry students were the subjects of the study. Initially, a survey was conducted, and samples were chosen using a basic random sampling procedure in accordance with sampling criteria. Individual students gave their consent, and confidentiality was guaranteed. The undergraduate dental students' degree of stress was measured using the Perceived Stress Scale (PSS).

From the options provided, the students were instructed to select the right answer. Following the pre-test, students received instruction from qualified yoga therapists listed in Table 1.1 on various yoga (pranayama) and meditation practices in a quiet and peaceful setting. The entire process took half an hour. Every day at home, the students were required to practise the Pranayama. The students were required to practise pranayama at home every day. On the fifteenth day of the intervention, the post-test was completed.

Participants:

The study included all the dental undergraduate students of 1st, 2nd, 3rd & 4th academic year.

Exclusion criteria:

Students with juvenile diabetes, anaemia, or any other systemic diseases. Students already practicing yoga, uninterested, unwilling and uncooperative students were also excluded.

Method of data collection:

A questionnaire that participants self-administered was used to gather data. Both closed-ended and structured open-ended questions are included in the survey. Four sections of the questionnaire addressed the study's predetermined goals: (a) socio demographic information, including the gender, age, educational attainment, course of study (dental or medical), and residence of the clinical students; (b) an evaluation of the participants' awareness of stress-induced oral ulcers and their knowledge of potential risk factors for these ulcers; and (c) a third section that assessed the participants' perceived stress levels using the modified perceived stress scale (PSS-10). A widely used self-report tool for assessing felt stress is the felt Stress Scale (PSS). A 5-point Likert-type scale is used to rate each item, with the range

from 0 = 'never' to 4 = 'very often'. The participants' existence, kinds, and locations of stress-induced mouth ulcers were evaluated in the fourth segment.

Perceived Stress Scale:

The Perceived Stress Scale (PSS) is a conventional instrument for measuring stress. The tool, which was developed in 1983, is still frequently used to help us understand how different situations affect our feelings and perceived stress. It is a gauge of how stressful one considers certain circumstances in their life to be. The purpose of the items was to gauge the respondents' level of unpredictability, uncontrollability, and overload in their life. A number of direct questions regarding present stress levels are also included in the scale. The PSS was created to be used with community samples that have completed at least junior high school. Both the items and the response options are straightforward to learn and comprehend. Furthermore, because the questions are general in nature, they don't provide a lot of information unique to any one subpopulation. This scale asks you about your thoughts and feelings throughout the past month. In each instance, you will be asked to rate the frequency of a certain idea or feeling. There are variations between the questions, even though some of them are similar, and you should approach each one as a distinct question. The best course of action is to respond really rapidly. Put another approach in place, instead of trying to count the times you felt a particular way, pick the choice that seems like a good estimation.

For each question choose from the following alternatives:

0: Never;

1: Usually never

2. Sometimes

3. Quite frequently

4-Very frequently

How many times in the past month have you been upset by an unforeseen circumstance

How many times in the past month have you felt that you had no control over the significant aspects of your life?

How many times in the past month have you experienced anxiety and tension?

How many times in the past month have you felt assured that you can manage your personal issues?

5. How many times did you feel that things were going your way in the past month?

6. How many times in the past month did you feel like you couldn't handle everything you had to do?

7. How many times in the past month have you been able to manage your annoyances?

8. How many times in the past month did you feel like you were on top of things?

9. During the past month, how many times have events beyond your control caused you to feel angry?

10. How many times in the past month have you felt that you were unable to conquer the challenges that were mounting so high?

Calculating a Personal PSS Score

We may calculate your PSS score by doing the following:

• Start by flipping your answers to questions 4, 5, 7, and 8. Modify the scores on these four questions as follows: 0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0.

• To obtain the total, sum the scores for each item.

I received a total score of _____.

• PSS scores range from 0 to 40, with higher scores correspond to higher levels of perceived stress.

► Low stress would be defined as scores between 0 and 13.

► Moderate stress would be defined as scores between 14 and 26.

► High felt stress would be defined as scores between 27 and 40.

Intervention:

The students were divided into 2 groups: Group A (YT=Yogic Training group) & Group B (Control group)

Group A includes students **with or without** clinical presentation of oral ulcers and **positive for stress assessment** undertaking guided yogic training from trained yogic therapists.

Group B includes students **without** clinical presentation of oral ulcers and **negative for stress assessment** undertaking guided yogic training from trained yogic therapists.

Yogic techniques included in a 21 minute guided Yogic relaxation method *(Table 1.1)*

SL NO	TECHNIQUES	COUNT OF EACH BREATH(Inhalation/Exhalation)	Number of rounds	Duration
	Upa yoga	Directional movement of arms (4 directions- sideways, forward, upward, downward)	3 cycles each	
	Knee rotation		3 rotations clockwise, 3 rotations counter clockwise	-
	Squatting		Once (swing & stretch 8-12 times)	-
	Neck practices	up and down sideways ear to shoulder head rotation shoulder rotation	3 cycles each	-
	Preparatory asanas	Patangasana Shishupalasana Nadi Vibhajana	- - 3 cycles	2 mins 2 mins -
	Shambhavi Mahamudra			

The statistical software program Statistical Package for the Social Sciences for Windows (version 25, Chicago, IL, USA) was used to tabulate and analyse the data. Descriptive analysis using frequencies, percentages, cross-tabulations, means, and standard deviations was the statistical analysis that was done. The relationship between variables with a p-value set ≤ 0.05 was ascertained using chi-square.

2. RESULTS:

Using SPSS 16 software, the data was statistically analysed using the t-test to compare the pre- and post-test stress perceptions and determine the impact of yoga (pranayama) on stress in dental undergraduate students at MNR Dental College and Hospital in Sangareddy.

Of the 400 participants in the study, 81.25% were female, and all academic years were equally represented (25% each). The majority of students lived in dorms (65%), with day scholars making up the remaining 35%. In terms of awareness, 70% of participants knew about mouth ulcers caused by stress, whereas 30% did not.

Of the subjects, 32.5% had a clinical prevalence of mouth ulcers, while 67.5% did not exhibit any ulcerative symptoms. According to the PSS-10 stress scale, 22.5% of people had low stress, 52.5% had moderate stress, and 25% had severe stress prior to the yoga intervention.

Group A (n = 200) had a significant change in stress levels after the yoga intervention: 75% reported low stress, 22.5% reported moderate stress, and just 2.5% reported high stress. Additionally, there was a considerable drop in the occurrence of oral ulcers in this group, going from 70 cases prior to yoga to 15 cases following the intervention, a decrease of 78.6%. On the other hand, throughout the same time period, there were no appreciable changes in the incidence of mouth ulcers or

stress levels in Group B (control group, n = 200).

Following yoga, Group A had significant decreases in stress levels ($\chi^2 = 31.89$, $p < 0.001$) and the prevalence of oral ulcers ($\chi^2 = 25.12$, $p < 0.001$), as well as statistically significant relationships between stress levels and the existence of oral ulcers ($\chi^2 = 28.67$, $p < 0.001$), according to chi-square analysis.

3. DISCUSSION:

Following yoga (Pranayama) training, dental undergraduate students at MNR Dental College and Hospital in Sangaredy showed a considerable reduction in their perceived stress levels. This illustrates unequivocally how yoga (Pranayama) instruction helps undergraduate dental students feel less stressed. The survey's findings showed that, even in the contemporary world, yoga (pranayama) has been beneficial for those who experience perceived stress.

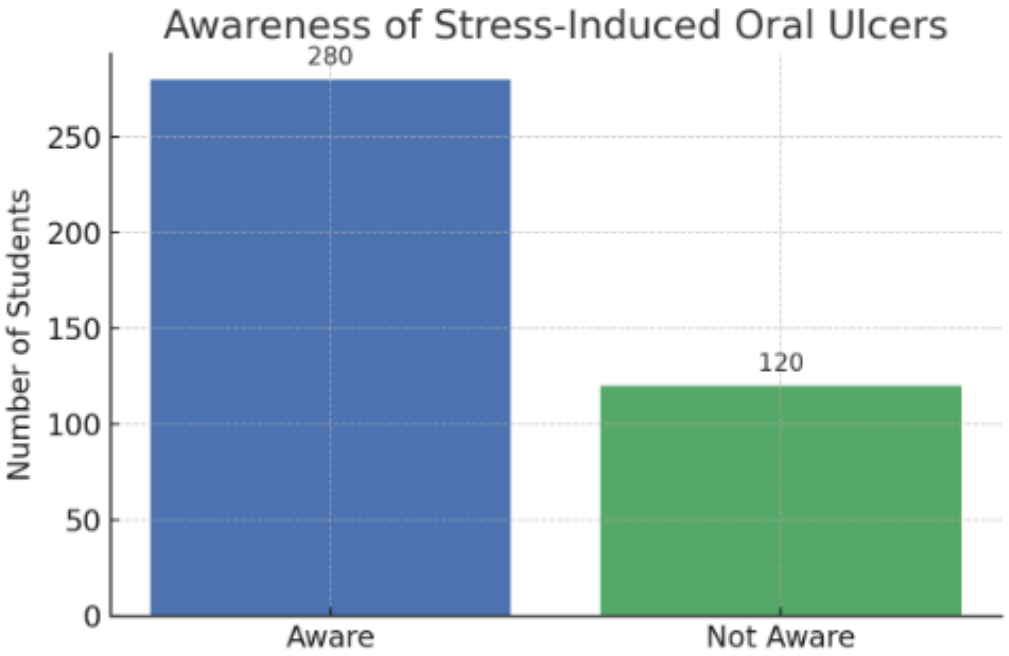
According to Udupa's (1985) research, patients with stress-related conditions such as hypertension, cardiovascular disease, asthma, and hypothyroidism benefited from certain yoga techniques. Numerous other studies have also demonstrated the beneficial effects of some yoga practices on stress-related issues and their mitigation (Udupa, 1985). Similar findings indicated that participants in yoga therapy groups had enhanced physiological responses in addition to psychological benefits. The yoga training may be responsible for the shift of perspective in how daily issues are perceived and handled. Subjects in the control group, however, did not exhibit this improvement. In fact, their coping mechanisms were not adaptive, they reported increased symptoms, and they showed no decrease in stress perceptions.

Yoga and pranayama are more than just physical activities; they have a profound impact on our awareness, according to Swami Ramdev's 2007 book Yoga Synergy in Medical Science. Pranayama and yoga directly improve our ability to think. Stress levels have also significantly decreased as a result of yoga and pranayama. Many people's memory ability has been negatively impacted by the stress and lifestyle of today, but yoga has given them a chance to recover.

Table 1: Demographic Profile of Participants (N = 400)

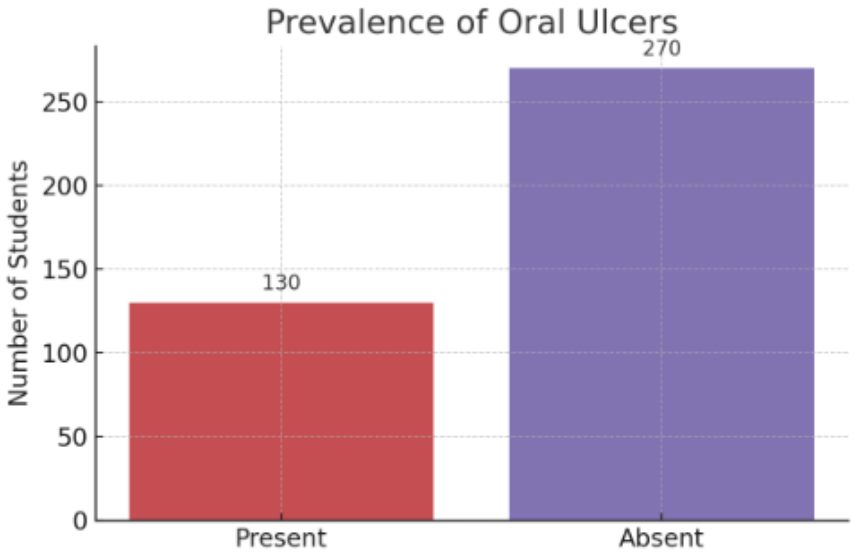
Demographic Variable	Categories	Frequency (n)	Percentage (%)
Gender	Male	75	18.75
	Female	325	81.25
Academic Year	1st Year	100	25.0
	2nd Year	100	25.0
	3rd Year	100	25.0
	4th Year	100	25.0
Residence	Hostel	260	65.0
	Day Scholar	140	35.0

Table 2: Awareness of Stress-Induced Oral Ulcers



Awareness Level	Frequency (n)	Percentage (%)
Aware	280	70.0
Not Aware	120	30.0

Table 3: Prevalence of Oral Ulcers

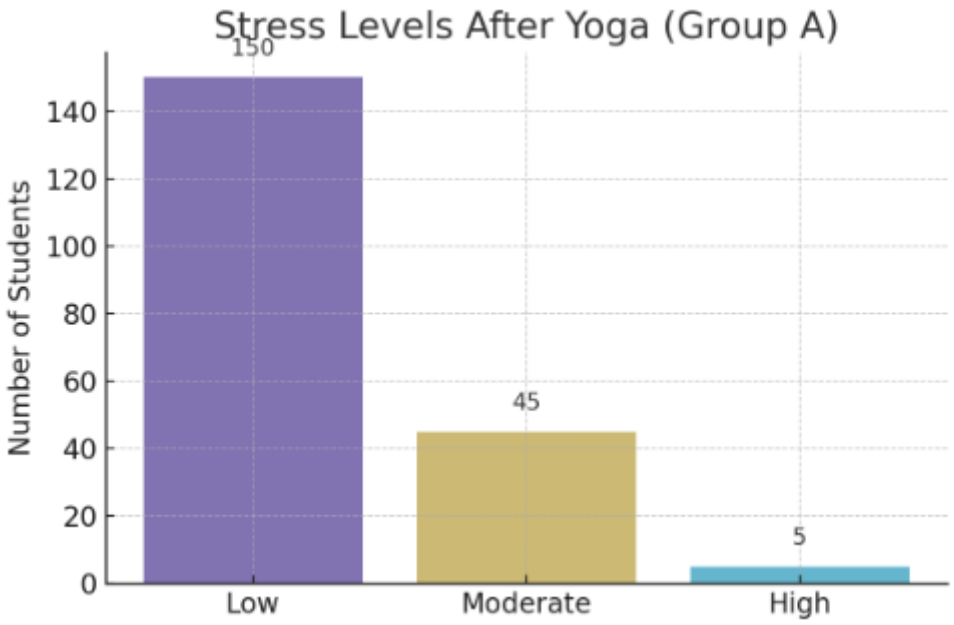


Clinical Oral Ulcers	Frequency (n)	Percentage (%)
Present	130	32.5
Absent	270	67.5

Table 4: Stress Level before Yoga (PSS-10)

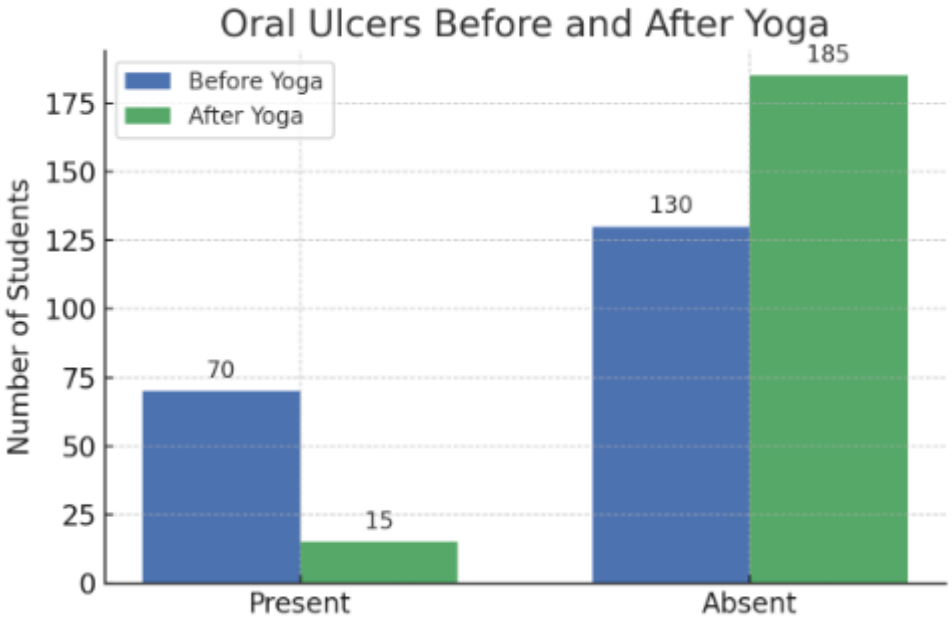
Stress Category	Frequency (n)	Percentage (%)
Low (0–13)	90	22.5
Moderate (14–26)	210	52.5
High (27–40)	100	25.0

Table 5: Stress Level after Yoga in Group A (n = 200)



Stress Category	Frequency (n)	Percentage (%)
Low (0–13)	150	75.0
Moderate (14–26)	45	22.5
High (27–40)	5	2.5

TABLE 6: PRESENCE OF ORAL ULCERS BEFORE AND AFTER YOGA IN GROUP A (N = 200)



Oral Ulcers	Before Yoga (n)	After Yoga (n)	Change (%)
Present	70	15	↓ 78.6%
Absent	130	185	↑ 42.3%

TABLE 7: CHI-SQUARE ANALYSIS RESULTS

Variable Compared	χ^2 Value	df	p-value	Significance
Stress Level vs. Oral Ulcers	28.67	2	<0.001	Significant
Pre- and Post-Yoga Stress in Group A	31.89	2	<0.001	Significant
Pre- and Post-Yoga Oral Ulcers in Group A	25.12	1	<0.001	Significant

4. CONCLUSION:

The study reveals a notable prevalence (32.5%) of stress-induced oral ulcers among undergraduate students, underscoring a strong psychosomatic link between academic stress and oral health. Although 70% of participants were aware of the stress-ulcer connection, the findings point to a need for enhanced stress management education within academic settings. The post-intervention results demonstrated that yoga and pranayama practices led to a substantial reduction in stress levels—with 75% of participants shifting to low-stress categories—and approximately 79% reduction in oral ulcers. These changes were statistically significant, confirming that regular yogic practice can be an effective non-pharmacological strategy to promote both mental and physical well-being in student populations

REFERENCES

[1] Okoh M, Nwokolo CO. Awareness and prevalence of stress induced oral ulcers among clinical medical and dental students in university of Benin: a cross-sectional study. Psychosom Med Res. 2023;5(1):6.

[2] Ajmal M, Ibrahim L, Mohammed N, Al-Qarni H. Prevalence and psychological stress in recurrent aphthous stomatitis among female dental students in Saudi Arabia. Clujul medical. 2018;91(2):216.

[3] Shaw W, Smith S, Burg M, Hostinar C, Alen N, Tinburg M. Stress effects on the body. Am Psy Assoc: 2018.

[4] Thiruvalluvan A, Sekizhar V, Ramanathan M, Bhavanani AB, Chakravathy D, Reddy JR. Effect of Pranayama Techniques with Marmanasthanam Kriya as Yogic Relaxation on Biopsychosocial Parameters Prior to Endodontic Therapy: A Cross Sectional Study Design. International Journal of Yoga. 2021 May 1;14(2):146-

51.

[5] Shankarapillai R, Nair MA, George R. The effect of yoga in stress reduction for dental students performing their first periodontal surgery: A randomized controlled study. International Journal of Yoga. 2012 Jan 1;5(1):48-51.

[6] Marya CM, Grover S, Jnaneshwar A, Pruthi N. Dental anxiety among patients visiting a dental institute in Faridabad, India. West Indian Med J. 2012;61:187–90. [PubMed] [Google Scholar]

[7] Vijayalakshmi P, Surendiran A. Effect of slow and fast pranayams on reaction time and cardiorespiratory variables. Indian J Physiol Pharmacol. 2005;49:313–8. [PubMed] [Google Scholar]

[8] Auriane PE, Ramanathan M, Bhavanani AB. Effect of short-term pranayama and meditation on cardiovascular functions in healthy individuals. Heart Views. 2011;12:58–62. [PMC free article] [PubMed] [Google Scholar]

[9] Ankad RB, Herur A, Patil S, Shashikala GV, Chinagudi S. Effect of short-term pranayama and meditation on cardiovascular functions in healthy individuals. Heart Views. 2011;12:58–62. [PMC free article] [PubMed] [Google Scholar]

[10] Shohani M, Badfar G, Nasirkandy MP, Kaikhavani S, Rahmati S, Modmeli Y, et al. The effect of yoga on stress, anxiety, and depression in women. Int J Prev Med. 2018;9:21. [PMC free article] [PubMed] [Google Scholar]

[11] Shankarapillai R, Nair MA, George R. The effect of yoga in stress reduction for dental students performing their first periodontal surgery: A randomized controlled study. International Journal of Yoga. 2012 Jan 1; 5(1):48-51.

[12] Marya CM, Grover S, Jnaneshwar A, Pruthi N. Dental anxiety among patients visiting a dental institute in Faridabad, India. West Indian Med J. 2012; 61:187–90. [PubMed] [Google Scholar]

[13] Vijayalakshmi P, Surendiran A. Effect of slow and fast pranayams on reaction time and cardiorespiratory variables. Indian J Physiol Pharmacol. 2005; 49:313–8. [PubMed] [Google Scholar]

[14] Auriane PE, Ramanathan M, Bhavanani AB. Effect of short-term pranayama and meditation on cardiovascular functions in healthy individuals. Heart Views. 2011; 12:58–62. [PMC free article] [PubMed] [Google Scholar]

[15] Ankad RB, Herur A, Patil S, Shashikala GV, Chinagudi S. Effect of short-term pranayama and meditation on cardiovascular functions in healthy individuals. Heart Views. 2011; 12:58–62. [PMC free article] [PubMed] [Google Scholar]

[16] Shohani M, Badfar G, Nasirkandy MP, Kaikhavani S, Rahmati S, Modmeli Y, et al. The effect of yoga on stress, anxiety, and depression in women. Int J Prev Med. 2018; 9:21. [PMC free article] [PubMed] [Google Scholar]

[17] Desai N, Bhuyan L, Nezam S, et al. Yoga and dentistry. J Clin Diagn Res. 2023; 17(8):ZE16–ZE20.

[18] Effect of yoga on dental care: Pranayama techniques or rhythmic breathing exercises on oral hygiene and gingival bleeding. Int J Appl Dent Sci. 2017; 3:91–95.

[19] The precedence and viability of yoga in the lives of D3-dental students, dental practitioners, and dental patients. J Family Med Prim Care. 2019; 8(12):3808–13.

[20] Secondary Effects of Yoga and Pranayama in Dentistry: A Narrative Review. J Clin Diagn Res. 2023.

[21] Benefits of yoga in dentistry. Int J Appl Dent Sci. 2023; 9(3):151–153.

[22] Yoga and Dental Health: A Review. Int Healthc Res J. 2021; 10:RV1–4.

[23] Relevance of yoga in dental education. Yomi Dent J. 2018.

[24] Effect of fast and slow pranayama on perceived stress and cardiovascular parameters in young health-care students. Int J Yoga. 2013; 6(2):104.

[25] Impact of yoga on periodontal disease and stress management. Int J Yoga. 2017; 10(3):121–127.

[26] Yoga in Modern Dental Practice – an oro-skeletal health through inner holistic balance. Afr J Biomed Res. 2024; 27(4S).

[27] Yoga helps to calm the body and controls pro-inflammatory cytokines, decreasing gingival bleeding and oral dryness. Rama Univ J. 2020.

[28] Benefits of yoga in dentistry – oxidative status improvement. Oral J. 2023.

[29] Can Yoga Bridge the Link Between Stress and Periodontal Disease? Today's RDH. 2020.

[30] Elements of yogic practice: Perceptions of students in healthcare programs. Int J Yoga. 2016; 9(2):121.

[31] Effect of yoga in stress reduction for dental students performing their first periodontal surgery: A randomized controlled study. Int J Yoga. 2012; 5(1):48–51.

[32] Yoga-based myofunctional therapy for orofacial development. Yomi Dent J. 2015.

[33] Stress-related oral manifestations in patients from Constanța County. Romanian J Oral Rehabil. 2024.

[34] Health impacts of Yoga and Pranayama: a state-of-the-art review. Int J Prev Med. 2012; 3(7):444–458.

[35] Exploring the therapeutic effects of yoga and its ability to increase quality of life. Int J Yoga. 2011; 4(2):49–54.

[36] Psychological interventions and wound healing. Psychoneuroendocrinology. 2017; 76:13-22.

[37] Breath of Life: The Respiratory Vagal Stimulation Model of Contemplative Activity. Front Hum Neurosci. 2018; 12:397.

[38] Effect of yoga on Myofascial Pain Syndrome of neck. Int J Yoga. 2014; 7(1):54–59.

[39] Management of myofascial pain dysfunction syndrome with meditation and yoga. Natl J Maxillofac Surg. 2018; 9(2):155–159.

[40] Painless tooth extraction by Jalandhara Bandha Yoga. J Ayurveda Integr Med Sci. 2016; 1(3):113–116.

[41] Perceived stress and bruxism in university students. BMC Res Notes. 2016; 9:514.

[42] Oral manifestations of stress-related disorders in the general population of Ludhiana. J Indian Acad Oral Med Radiol. 2016; 28:262–269

[43] Modulation of immune responses in stress by Yoga. Int J Yoga. 2008; 1(2):45–55.

[44] Yoga-based guided relaxation reduces sympathetic activity. Psychological Reports. 2002; 90:487–94.

[45] Effect of Yoga Nidra on physiological variables in menstrual disturbances. Indian J Physiol Pharmacol. 2012; 56(2):161–167.

[46] Effect of yoga on academic performance in relation to stress. Int J Yoga. 2009; 2(1):39.

[47] Yoga as an Alternative and Complementary Approach for Stress Management: A Systematic Review. J Evid Based Complement Altern Med. 2014; 19(1):59-67.

[48] Effectiveness and safety of yoga to treat chronic and acute pain: A rapid review. BMJ Open. 2021; 11(12).

[49] A multicenter study of physician mindfulness and healthcare quality. Ann FAM Med. 2013; 11(5):421–428.

[50] Yoga anatomy. Camden: North Atlantic Books; 2007.