ijlpr 2021; doi 10.22376/ijpbs/lpr.2021.11.4.L147-152

International Journal of Life science and Pharma Research

Research Article

Yogic Science For Better Dental Health

Effect of Yoga on Quality of Life of Oral Healthcare Professionals during Covid-19 Pandemic

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Abstract: Yoga is a holistic approach to mental and physical health and is classified by the national institutes of health as a form of complementary and alternative medicine for human life. COVID 19 pandemic has impacted the quality of life of oral health care professionals. Our aim was to assess the effect of yoga on the quality of life of these professionals . Thirty participants (12 male/18 female) with a mean age 40.5 ± 2.5 years were prepared utilizing a 45-minute common yoga protocol module .All members went to 24 sessions over a 4-week regimen. A standard WHOQOL-BREF survey was utilized to evaluate the QOL in 4 areas (physical, psychological, social and environmental). The responses in terms of scores from the survey were investigated utilizing independent student 't' test. The change in the QOL following a 4-week yoga session was our studied outcome. After 4 weeks there was a significant change in physical domain (p=0.001), psychological domain (p=0.045) and in the total mean WHOQOL score (p=0.028).It was found that integrating yoga in daily curriculum does enhance the quality of life of oral healthcare professionals in the current COVID 19 Pandemic .

Keywords: Yoga , COVID-19 , stress, dentist , quality of life

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Recieved On 30 June, 2021
Revised On 26 July, 2021
Accepted On 27 July, 2021
Published On 30 July, 2021

Funding This research did not receive any specific grant from any funding agencies in the public, commercial or not for profit sectors.

Citation Dr. Chandrashekar Pandey ,Dr.Akhilesh Shewale, Dr. Sneha Puri, Dr. Shweta Bhayade , Dr. Aruna Daware and Dr. Indrajeet Deshpande , EFFECT OF YOGA ON QUALITY OF LIFE OF ORAL HEALTHCARE PROFESSIONALS.(2021).Int. J. Life Sci. Pharma Res.11(4), L147-152 http://dx.doi.org/10.22376/ijpbs/lpr.2021.11.4.L147-152

1. INTRODUCTION

'Yoga', is derived from a sanskrit term interpreted as 'to join' or 'to unite,' signifying the union of body and consciousness. It has its 3000 years old origin in Indian philosophy and is a multi-component discipline that comprises a triad of practices, namely postures (Asanas), breathing regulation techniques (Paranayama) and meditation (Dhyana) which aids in attaining a state of dissociation from oneself and disturbing thought or activities.[1] Yoga has been anticipated as a non-pharmacological intervention for mental issues (e.g., stress, fear) and disorders, either alone or as an adjunct to other interventions. Also, it has been found effective in reducing perceived stress, reducing fatigue in cancer patients, improving blood sugar regulation in individuals with diabetes mellitus, diastolic blood pressure, symptoms of menopause, musculoskeletal disorders and asthma thereby resulting in gaining emotional control, and improve self-efficacy, self-confidence, and overall quality of life. [2]COVID-19 Pandemic ,as declared by WHO in March 2020 after an acute infectious viral disease caused by the novel coronavirus (SARS-CoV-2), which reportedly originated in the Wuhan province of China and since then spread to 213 countries.[3] The figures of confirmed cases of COVID-19 in India increased exponentially from 727 in the month of March 2020 to more than 15 million cases till date , making it the third most affected country in the world.[4] In response to the pandemic, the Indian Government imposed section 144 with a progressive lockdown of 21 days, from March 25 to April 14, 2020, which was further extended to 60 days.[5,6]The drastic surge of infected patients notably impacted mental health among frontline healthcare workers as well as other healthcare providers, including dentists.[7] Oral Healthcare professionals are under the highest risk category for contracting COVID-19 infection as the SARS-CoV-2 transmission was reported during dental procedures through the inhalation of aerosol/droplets of water, saliva, blood, microorganisms and other debris from infected individuals during the the use of rotary and surgical instruments that create a visible spray or direct contact with mucous membranes, oral fluids, and contaminated instruments and surfaces.[8,9] due to which WHO has recommended dental practioners to limit the treatment for emergency needs only , which ultimately affects the dental training and practice of dental students . Furthermore, the lack of adequate personal protective equipment (PPE), high investment in clinical disinfection, reduced clinical outpatients due to social stigma associated with the pandemic have added to the emotional and financial burden of the dental experts.[10] Common Yoga Protocol, was drafted by the committee of Yoga experts and heads of the eminent Yoga Institutions of India under the Chairmanship of Dr. H.R. Nagendra, Chancellor, S-VYASA University, Bangalore and includes useful Yogic practices for healthy living of an individual. This protocol was endorsed by Ministry of AYUSH ,India on the occasion of First International Yoga day observed on 21st June at Rajpath , Delhi.[1] Keeping in mind the present scenario and well being of oral healthcare professionals, we evaluated the effect of Common yoga protocol on their quality of life .

2. MATERIALS AND METHOD

Thirty oral healthcare professionals (12 male/18 female) who fall under an age group of 30-50 and haven't performed yoga in the last 6 months were enlisted for this investigation following the approval from Institution Ethical Board. All the participants filled a self reporting survey (WHOQOL-BREF) before completing any investigation and at the end of the study period. The participants were prepared for 45-minute Common Yoga Protocol module comprising of Asanas enlisted in Table 1.

Table 1 . Common Yoga Protocol

	Asanas	Protocol	Duration
1.	Prayer	To enhance the benefits of practice.	2 minutes
2.	Loosening practices	Increases microcirculation:	5 minutes
		• Neck bending	
		• Trunk movement (Katishaktivikasak)	
		• Knee movement	
3.	Yogasanas (1 minute per Asana)	**Standing postures**	15 minutes
		• Tadasana (Palm tree pose)	
		• Vkrsasana (Tree posture)	
		• Padahastasana (The hands and feet posture)	
		• Ardhacakrasana (The half wheel posture)	
		• Trikonasana (The triangle posture)	
		Sitting postures	
		• Bhadrasana (The firm auspicious posture)	
		• Ardhaustrasana (The half camel posture)	
		• Sasankasana (The hare posture)	
		• Ardhaustrasana	
		• Vakrasana (The spinal twist posture)	
		Prone postures	
		• Bhujangasana (The cobra posture)	
		• Salabhasana (The locust posture)	
		• Makarasana (The crocodile posture)	
		Supine postures	
		• Setubandhasana (The bridge posture)	
		• Uttanapadasna	

		• Ardhahalasana (Half plough posture)	
		• Pavanamuktasana (The wind releasing posture)	
		• Savasana (The dead body posture)	
4.	Kapalbhati	Forceful exhalation by contracting the abdominal muscles.	2 minutes
5.	Pranayama (2 minutes each)	• Nadishodhana or Anulomvilom (Alternate nostril breathing)	8 minutes
		• Satali Pranayama	
		• Bhramari Pranayama	
		• Dhyan in Shambavi Mudra	
6.	Meditation	For stress-free deep relaxation and silencing of the mind.	12 minutes
7.	Sankalpa	Commitment to be a healthy, happy, peaceful and joyful human being.	1 minute
8.	Shanti Path	Prayer for happiness, health and peace for all.	1 minute

All members went around 24 sessions (approx 700 minutes) over 4 week and they filled the WHOQOL-BREF –survey form.[11] This survey questionnaire addresses four domains pertaining to an individual quality of life namely physical, psychological, social relationships, and environmental areas. Each Domain incorporates various facets of the individuals life as depicted in Figure 1.

Domain	Facets incorporated within domains
1. Physical health	Activities of daily living Dependence on medicinal substances and medical aids Energy and fatigue Mobility Pain and discomfort Sleep and rest Work Capacity
2. Psychological	Bodily image and appearance Negative feelings Positive feelings Self-esteem Spirituality / Religion / Personal beliefs Thinking, learning, memory and concentration
3. Social relationships	Personal relationships Social support Sexual activity
4. Environment	Financial resources Freedom, physical safety and security Health and social care: accessibility and quality Home environment Opportunities for acquiring new information and skills Participation in and opportunities for recreation / leisure activities Physical environment (pollution / noise / traffic / climate) Transport

Fig 1: WHOQOL-BREF Domains

The scoring system for the WHOQOL-BREF is performed for four domains. The scoring of the domains is done in a positive direction. The higher the positive facets score, the higher the quality of life. The sum of each domain item indicates the domain's final score. The sum is then multiplied by 4 to make the score of the domain compatible with the WHOQOL-100 score. Then, the sum of all the domains is converted into 0–100 scale by the following formulas(Fig 2). 11

	Equations for computing domain scores	Raw score	Transformed scores*	
Domain 1	(6-Q3) + (6-Q4) + Q10 + Q15 + Q16 + Q17 + Q18 ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=	4-20	0-100
Domain 2	Q5 + Q6 + Q7 + Q11 + Q19 + (6-Q26) ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=		
Domain 3	Q20 + Q21 + Q22 ☐ + ☐ + ☐	=		
Domain 4	Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25 ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=		

Fig 2: Scoring for WHOQOL - BREF Instrument

3. STATISTICAL ANALYSIS

Graphpad Prism software (Ver 9.0.0) was used for statistical analyses. Descriptive statistics included means, standard deviations, frequencies, and percentages. Shapiro –Wilk test was performed to assess the normality of WHOQOL –BREF variables followed by Independent Student *t*-tests to compare the mean score of QOL for the dentists before and after 4 week of yoga module . A value of less than 0.05 was considered statistically significant.

4. RESULTS

Table 2: Profile of participants.

	n	Frequency (%)
Male / Female	12/18	40 / 60
Hypertension	11	36.66
Diabetes mellitus	9	30
Migraine	6	20
Low back pain	16	53.33
Osteoarthritis	4	13.33
Plantar fasciitis	3	10
Obesity	13	43.33
N= Total no. of Participants (30)		

Table 3: WHOQOL-BREF scores before and after 4-week yoga course

	Before Yoga mean(SD) (N=30)	After Yoga mean(SD) (N=30)	Change Mean (95% C.I.)	P value* (p)
Physical	25.60 (0.73)	27.45 (0.75)	-1.85 (-2.86 to -0.84)	**(0.001)***
Psychological	20.35 (0.59)	20.60 (0.63)	-0.25 (-1.50 to 1.00)	(**0.045**)
Social Domain	32.15 (0.85)	32.40 (0.82)	-0.25 (-1.56 to 1.06)	(0.693)
Environment	27.85 (0.99)	28.80 (1.05)	-0.95 (-2.32 to 0.42)	(0.163)
Total score	89.30 (2.37)	92.70 (2.38)	-3.40 (-6.40 to -0.40)	**(0.028)***

Values are mean ±S.D(n= 30)

** p value < 0.05 when compared with before yoga module tested by independent student 't' test*

All the thirty participants completed the 4-week course of yoga. Table 2 demonstrates the demographic profile of the participants. The mean age was 40.5 ± 2.5 years with 60% of them being females. The most well-known related comorbid conditions were low back pain, hypertension, diabetes mellitus and Obesity .Table 3 demonstrates the WHOQOL-BREF scores for the distinctive areas and the aggregate scores when 4- week yoga session were completed . After 4 weeks there was change in physical domain (p=0.001), psychological domain (p=0.045), social domain (p=0.693), and environmental domain (p=0.163). For all areas pooled together there was a noteworthy change in the total score (p=0.028). Additionally, the mean WHOQOL-BREF score increased fundamentally from 89.30 to 92.70 after 24 sessions of yoga (p<0.05)

5. DISCUSSION

The present study evaluated the effect of yoga on the quality of life of oral healthcare professionals during the COVID 19 pandemic . In a previous study[12] carried out in India, high level of depression was observed in significant number of dental students and practitioners and the authors emphasized the importance of monitoring and addressing the mental health needs of these professionals during and after the lockdown. We have observed that majority of our participant (53.33%) oral health professionals were suffering from lower back pain. These findings were in concordance with other studies [13,14,15] and possibly occur due to the repeated leaning towards the patient in the sitting posture causing imbalance in muscles between the lower back and abdominal muscles leading to strain and overexertion in the lower back extensor muscles while at the same time, causes weakened stabilization of the deep abdominal muscles [16,17] Lower back pain is one amongst the main concern which affects the physical domain of the QOL in our participant, we found a significant improvement in this domain following the yoga regimen, these findings were in agreement with the previous studies on healthcare workers [18,19] The possible explanation of lowering the pain could be due to the impact of yoga interventions on the serum levels of serotonin, cortisol, dehydroepiandrosterone (DHEA), and brain derived neurotrophic factor (BDNF) .It has been speculated that that serotonin increases with exercise intervention, mediating beneficial effects of exercise on mental and neurological disorders and BDNF enhances serotonin signaling, which in turn increases the level of BDNF this serotonergic interaction aids in antinociceptive mechanism .[20,21] Pranayama, meditations, and relaxation techniques following *yogasanas* help to relax joints and muscles, reduce oxidative stress, and calm the mind [22] which cumulatively improves the physical wellbeing of an individual. A significant improvement in the psychological domain that deals with perceived stress related issues has also been observed in our participants. Our findings are consistent with findings that yoga asanas practice appears to modulate the regulation of the sympathetic nervous system (SNS) and hypothalamic-pituitary-adrenal (HPA) system in people experiencing depressive symptomatology[23] and also associated with decrease in the serum levels of IL-6[24], CRP[25] and cortisol[26]. Social and Environmental domain of WHOQOL-BREF also showed non-significant improvement in our participants which possibly occurred due to the fact that yoga does acts as a cognitive behavioral therapy[27] which improves one's social and also due to same working environment of our participants significant changes in the environmental domain was not noticed . The strengths of the study are that no previous study has reported effect of integrated yoga intervention on QOL of dental professional in the current covid 19 pandemic and owing the use of globally accepted standard common yoga protocol in our study the acceptability and adherence to therapy was good and could be reproduced in the exact way for future interventions.This

study has a few limitations, namely smaller sample size and observational design of the study .

5.1 Recommendations

From this study, we would suggest the following recommendations:

1. Inclusion of yoga in the BDS curriculum by the Dental Council of India. This would create awareness of yoga and its benefits on general health among dental students and enable them to practice yoga during their course of study
2. To conduct periodic short-yoga courses for dentists by the State/Local branches of Indian Dental association/Academic Institution. This would enable dentists to continue the practice of yoga throughout their life.

6. CONCLUSION

The present COVID -19 pandemic situation has negatively impacted the lives of oral healthcare professionals, our study demonstrated that integrating yoga in the daily routine could be an integrated non pharmacological therapeutic tool and feasible intervention for improving their quality of life . The future studies should incorporate more laboratory objective variables such as electromyography, radio-imaging, biochemical measures, and other advanced objective variables of autonomic functions.

7. AUTHORS CONTRIBUTION STATEMENT

Dr. Chandrashekhar Pandey and Dr. Akhilesh Shewale conceptualized and collected the data with regard to this study . Dr. Akhilesh Shewale , Dr. Sneha Puri ,Dr. Shweta Bhayade analyzed this data .Dr. Aruna Daware and Dr. Indrajeet Deshpande has provided necessary inputs towards the designing of the manuscript .All authors discussed the methodology and results and contributed to the final manuscript . All the authors read and approved the final version of the manuscript.

8. CONFLICT OF INTEREST

Conflict of interest declared none.

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