

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_394_19

Impact of residential yoga training on occupational stress and health promotion in principals

Anita Verma, Sanjay Uddhav Shete, Gururaj Doddoli¹

Abstract:

BACKGROUND: Occupational stress is known as harmful physical and emotional responses that occur when the requirements of the job do not match the resources, needs, or capabilities of an employee, leading to poor mental and physical health.

OBJECTIVE: The objective of the present study was to assess the effect of 1-week residential yoga training program on occupational stress and its subscales among principals.

METHODS: Thirty-three principals with ages 40–59 years completed the assessment. They received yoga training at Kaivalyadham Yoga Institute. All the participants were recruited by Kendriya Vidyalaya Sangathan as part of their on-duty yoga training. At the baseline and after 1 week of yoga training participants were assessed for occupational stress. The yoga intervention was given in the morning and evening for 105 min. Apart from yoga training, all the participants were engaged in lectures based on stress management, yoga for total health, meditation, yoga in school education, and scientific basis of yoga, daily for 3 h.

RESULTS: The principals showed a significant decrease in role overload ($P < 0.001$), role ambiguity ($P < 0.01$), role conflict ($P < 0.05$), under participation ($P < 0.001$), powerlessness ($P < 0.001$), intrinsic impoverishment ($P < 0.01$), law status ($P < 0.001$), and overall occupational stress ($P < 0.001$) after 7 days of yoga training intervention. However, there was no significant change in unreasonable group and political pressure ($P > 0.05$), responsibility for persons ($P > 0.05$), poor peer relations ($P > 0.05$), strenuous working conditions ($P > 0.05$), and unprofitability ($P > 0.05$) after yoga training intervention.

CONCLUSION: The present study suggests that 1 week of residential yoga training program can improve occupational stress in principals.

Keywords:

Health, occupational stress, principals, yoga

Department of Scientific Research, Kaivalyadham Yoga Institute, ¹Health Care Centre, Ayurveda Section, Kaivalyadham Yoga Institute, Lonavla, Pune, Maharashtra, India

Address for correspondence:

Mr. Sanjay Uddhav Shete, Department of Scientific Research, Kaivalyadhama, Swami Kuvalayananda Marg, Lonavla, Pune - 410 403, Maharashtra, India. E-mail: sanjays@kdhm.com

Received: 11-07-2019
Accepted: 24-10-2019
Published: 28-02-2020

Introduction

Occupational stress can be defined as harmful physical and emotional responses that occur when the requirements of the job do not match the resources, needs, or capabilities of an employee, leading to poor mental and physical health.^[1] Occupational stress is caused by various occupational factors along with social and individual factors. Low back pain, musculoskeletal disorders, hypertension,

obesity, diabetes, depression, cardiovascular disorders, psychosomatic and mental disorders, and digestive problems are some of the commonly reported occupational hazards among nurses, police personnel, school teachers, banking sector employees, and doctors.^[2-8] However, some degree of stress is common to every organization at different hierarchy levels.

A study conducted in Greece to find out the most common causes of stress among school teachers revealed a lack of interest, low attainment, problems

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Verma A, Shete SU, Doddoli G. Impact of residential yoga training on occupational stress and health promotion in principals. *J Edu Health Promot* 2020;9:30.

in interaction with students, and handling students with difficult behavior were the most common causes of stress.^[9] Female teachers experienced stress while interacting with colleagues and students, emotional exhaustion, students' progress, and workload. Furthermore, disengagement from profession, government support, and mental exhaustion were main causes of occupational stress. Further, a recent study concluded that voice disorder among teachers was associated with increased absenteeism in schools.^[10] Health-related quality of life and high anxiety were found to be marginally associated with voice disorders in teachers.

Principals are mainly responsible for administrative work worldwide leading to tremendous stress. They have to deal with admissions, parents, students, staff, etc., which lays excessive burden on them mentally and physically.^[11] They have to take right and quick decisions in order to deal with everyday problems. According to a research study, teachers with role overload experience negative health outcomes as compared to role underload.^[12] Further, high level of emotional exhaustion is associated with high job demand, high overcommitment, and low skill discretion. In addition, occupational stress was found to be significantly associated with dimensions of burnout among teachers,^[13-15] doctors,^[16] and bank employees.^[17,18] Therefore, it has been argued that school principals need to acquire counseling skills and also need supporting lifestyle intervention for reducing work-related stress and burnout.^[19] Review of the past literature revealed that there is a dearth of studies related to occupational stress among principals. Thus, there is an urgent need to seek effective solutions for reducing occupational stress in principals and administrators of the school.

Nevertheless, various training strategies have been used to overcome the stress in employees such as counseling, communication training, and relaxation exercises.^[20,21] Similarly, Transcendental Meditation technique and health education demonstrated positive impact on health and reduction in stress.^[22-24]

However, the strategies that are easy to implement, cost-effective, and have minimal side effects should be used to cope with occupational stress. Yoga practices have proved to be effective in stress reduction and related symptoms such as depression, anxiety, and psychosomatic disorders in varied population.^[25-28] Yoga is an ancient traditional Indian practice which promotes physical, mental, and spiritual well-being of an individual. Yoga primarily includes asanas (physical postures) and pranayama (controlled breathing) which leads to relaxation of mind and body.^[29] Yoga practices were found to be effective in individuals working in

highly stressful environment.^[30] Therefore, integrating yoga practices into the workplace may prove to be convenient, practical, cost-effective, and highly beneficial solution for abating the damaging effects of occupational stress among principals. Past studies conducted in the field of yoga and its influence on work-related stress in educational field focus mainly on college students,^[31-34] healthy adults,^[35,36] and teachers.^[37-39] However, there are no studies conducted so far among principals and administrators.

Considering that principals of Kendriya Vidyalaya are under constant stress, we hypothesized that 1 week rigorous residential yoga training program could reduce occupational stress of principals. This rigorous residential yoga training may lead to health promotion and reduction of stress amongst principals. To our knowledge, this is the first study which is focusing on the effect of yoga practices on occupational stress of school principals of India.

Methods

Study design and recruitment of research participants

The present study adopted a single-group pre-post research design, wherein 33 Kendriya Vidyalaya principals with ages 40–59 years completed the assessments. Convenience sampling method was used in this study since the principals were willing to participate, easily accessible, and available at a given time. This study was conducted at Kaivalyadham Yoga Institute, Lonavla, India. All the participants were deputed by Kendriya Vidyalaya Sangathan as part of their on-duty yoga training. To be included in the study, the participants had to (i) be principals, (ii) have at least 15 years of experience as a principal, (iii) complete the questionnaires correctly, and (iv) be fluent in English and Hindi. The study participants were explained about the research protocol in detail. The entire group agreed to participate in the study voluntarily. However, the participation was entirely voluntary and the participants were free to withdraw from the study at any point of time. Since all participants were deputed to learn yoga, it was not possible to have a comparison group with an alternate intervention. As this experiment includes human subjects, an undertaking (informed consent) from each participant about willingness for participation was obtained prior to conduct of this study. As Yoga exercises are harmless and noninvasive technique, no participant experienced any problem in the participation. Moreover, the consequences of the said training program for a period of 1 week was not expected to be detrimental in any way. The baseline characteristics of participants have been presented in Table 1.

Table 1: Baseline characteristics of the study participants

Characteristics	Details
Group mean age (years), mean±SD	52.42±5.80
Age (range)	40-59
Gender (%)	
Male	27 (81.8)
Female	6 (18.1)
Weight (kg), mean±SD	74.3±8.5
Diabetics (%)	14 (42.4)
Nondiabetic as actual (%)	19 (57.5)
Systolic blood pressure, mean±SD	125.1±11.5
Diastolic blood pressure, mean±SD	81.8±8.1

SD=Standard deviation

Assessment

On the day prior to the 1st day of training and on the day after the 7th day of training, all the participants were assessed for occupational stress using Occupational Stress Index questionnaire. The scale purports to measure the extent of stress which is perceived by the employees due to various conditions of their job. This scale measures the stress arising exclusively due to job roles. The scale consists of 46 items, each to be rated on five-point scale.^[40] Out of 46 items, 28 are true keyed and 18 are false keyed. The items relate to almost all relevant components of the work life which cause stress in some way or the other. Forty-six items of occupational stress are distributed in 12 subscales, namely, (1) Role overload, (2) Role ambiguity, (3) Role conflict, (4) Unreasonable group and political pressure, (5) Responsibility for persons, (6) Under participation, (7) Powerlessness, (8) Poor peer relations, (9) Intrinsic impoverishment, (10) Law status, (11) Strenuous working condition, and (12) Unprofitability. The participant had to choose one out of the five options provided for each item, i.e., Strongly disagree, disagree, undecided, agree, and strongly agree. The scores for overall occupational stress range from 46 to 230 and were recorded in points. The reliability index ascertained by split-half (odd-even) method and Cronbach's alpha coefficient for the scale as a whole were 0.935 and 0.90, respectively.

Intervention

Based on the past research studies, the yoga program was implemented. Further, the training module was shown to various yoga teachers and experts.^[41,42] Asanas work with the deeper muscles of the body, and therefore, utmost care was taken while practicing it.

The yoga intervention was given in the morning and evening for 105 min each. The morning session consisting of yoga asanas was held from 6:30 to 7:45 am followed by Shuddhi Kriya between 7:45 and 8:15 am, whereas evening session was conducted from 5:00 to 6:00 pm followed by Pranayama, Trataka, and

Om Chanting between 6:15 and 7:00 pm. Each session was started with prayer and ended with Shanti Path as per Kaivalyadham's tradition. The yoga training was conducted under the supervision of yoga expert having experience of >10 years. All the sessions were conducted in a large hall accommodating more than fifty participants. Instructions were given in English as well as in Hindi language. Benefits and impact of each yoga posture on body and mind were explained by the yoga teacher during practical sessions. They were advised not to compete with fellow practitioner or attempt to attain final position right in the beginning, especially when their body is not ready for the same. Practice was given according to the participants body limitations. Maintenance of the final posture in asana according to one's own limitations and in a relaxed way was emphasized. There was no tremor or any type of discomfort during maintenance of asanas. They were instructed not to alter the breathing voluntarily during asana, as the body would adjust the breathing as per the posture. Further, any doubts regarding yoga postures were clarified by the yoga teacher. Same yoga teacher was appointed for all the sessions in order to maintain the uniformity in teaching yoga practices. The details of yoga training and technique have been presented in Table 2.

Apart from yoga training, participants were given lectures for 3 h/day. The lectures were given by the experts in yoga philosophy. The lectures were based on stress management, yoga for total health, meditation, yoga in school education, and scientific basis of yoga and pranayama. Participants were free to do their daily chores for rest of the day. Nutritious and well-balanced diet was provided to all the participants in health-care center at a fixed time for 7 days.

All the participants stayed in a controlled environment at Kaivalyadham which is spread over two hundred acres of land.

Data analysis

Data were evaluated by IBM, Statistical Package for the Social Sciences (SPSS), India, Version 20.0. The Shapiro-Wilk test was used to assess the normality of distribution of investigated variable. Paired *t*-test was used to compare the mean scores of occupational stress and its domains within the group. Statistically significant level was set as 0.05.

Results

The Kendriya Vidyalaya principals showed a significant decrease in role overload ($t = 5.42$, $P < 0.001$); role ambiguity ($t = 2.65$, $P < 0.01$); role conflict ($t = 2.28$, $P < 0.05$); under participation ($t = 4.19$,

Table 2: Details of yoga training program

Practices	Technique	Duration
Prayer		1 min
Supine postures		
Shavasana (corpse pose)	Lie on your back, keeping legs 1-2 feet apart. Hands should be on the side of the body Palms should be facing upward. Focus on your breath. Close your eyes Return to original position	5-10 min
Ardhahalasana (half plough pose)	Lie down in Shavasana with both legs together, hands on the side of thighs While breathing in slowly, raise one leg 90° to the ground and keeping the knee straight Stay in this position as long as comfortable and return to the original position while breathing out	5-10 s
Uttanpadasana (leg raised pose)	Lie down in Shavasana with both legs together, hands on the side of thighs, palm facing downward Raise both the legs together slowly up to 30°, 45°, 60° angle slowly Stay in this position as long as comfortable and return to the original position while breathing out	5-10 s
Setubandhasana (bridge pose)	Lie down in Shavasana with both legs together, hands on the side of thighs, palm facing downward Fold your legs from the knees, feet touching the ground Slowly exhale and raise the body up, keeping head, neck, and feet on the floor, and rest of the body is lifted up in the air. Hold and return back slowly to the original position	5-20 s
Pavanmuktasana (wind-release pose)	Lie down in Shavasana with both legs together, hands on the side of thighs, palm facing downward Slowly pull both the legs toward chest while folding from the knees and holding the knees with fingers interlocked. Simultaneously, lift the head and touch the chin to the knees	5-10 s
Prone postures		
Makrasana (crocodile pose)	Lie on your abdomen, keeping legs 1-2 feet apart, hands by the side of the thighs Toes should be outward and heels should be inward Slowly bring left hand forward, fold it from the elbow, and place it under the right shoulder. Do the same with right hand. Place your head in the triangle made the elbows Relax for a while and return back to original position	1-5 min
Niralambasana (pillar pose)	Lie on your abdomen in prone position with feet together and hands on the side of thighs Lift your chest slowly while supporting your face with both the palms and elbow on the floor Hold this position for a comfortable duration Slowly come back in original position	10-30 s
Bhujangasana (cobra pose)	Lie on your abdomen in prone position with feet together and hands on the side of thighs, forehead resting on the ground Slowly fold both the hands at the elbows, palms facing downward and on side of the chest Raise chin upwards, head and chest backward as much as possible while gazing toward the sky. Don't raise the navel Hold the final posture and slowly come back to the original position in the same sequence	5-10 s
Shalabhasana (locust pose)	Lie on your abdomen in prone position with feet together pointing outward and hands on the side of thighs, forehead resting on the ground Close fists and place them under the thighs. Chin should be placed on the ground Raise both the legs slowly without bending from the knees. Pelvic area should be on the floor. Hold this position and slowly come back in original position	5-10 s
Sitting postures		
Vajrasana (thunderbolt pose)	Sit with legs forward and extended. Hands should be on the side of the body Fold the right leg slowly from the knee, while placing the foot under the right hip. Sole should be inward. Similarly, do it with left leg. Sit erect while keeping both the hands on respective thighs and gazing in the front Return in the same sequence slowly	30-120 s
Marjarasana (cat pose)	Sit in Vajrasana, stand on your knees, and lean forward taking support of your hands. Keep hands and thighs perpendicular to the floor In this position, stretch the spine upward while pulling the stomach inward. Do the reverse while coming back Come back in the original position in the same sequence	
Uttanmandukasana (extended frog pose)	Sit in Vajrasana. Spread both the knees while keeping the toes together Lift left hand and place the palm on back of the right shoulder. Simultaneously, do it with right hand. Stretch backward slightly Slowly come back in original position	5-10 s

Contd...

Table 2: Contd...

Practices	Technique	Duration
Shashankasana (rabbit pose)	Sit in Vajrasana	10-30 s
	Slowly inhale and raise the arms above the head maintaining shoulder width distance between both the arms	
	Slowly lean forward bending from the pelvic area, rest your forehead and hands on the ground	
	Return to original position in the same sequence	
Janusirasana (head to knee pose)	Sit with legs forward and extended. Hands should be on the side of the body	5-10 s
	Slowly fold the right leg and keep it at the root of the left thigh. Bend forward while exhaling and hold the left foot with both the hands	
	Similarly repeat with the left leg	
Vakrasana (spinal twist pose)	Sit with legs forward and extended. Hands should be on the side of the body	5-10 s
	Slowly fold left leg from the knee and place the feet on the ground near the right knee	
	Place left hand at the back of the left hip at some distance from the spine	
	Place right hand on the other side of the left knee	
	Now twist back and head backward while gazing at the back	
	Return back in the same sequence slowly	
Gomukhasana (cow pose)	Sit with legs forward and extended. Hands should be on the side of the body	5-10 s
	Slowly fold the right leg from the knee and place the feet on the ground on the side of the left hip.	
	Likewise, bring the left leg from top of the right leg, placing it on the floor on the side of right hip. Soles of both the feet should be outwards toward right and left side	
	Sit erect while placing both the palms one above the other over the knees. Gaze in front	
	Return to original position in the same sequence and repeat with the opposite leg	
Parvatasana (mountain pose)	Sit in Padmasana. Lift both the hands upward, palms facing each other	10-60 s
	Make a fist of both the hands and stretch your body upward	
	Release the pose and return to original position	
Bhadrasana (throne pose)	Sit with legs forward and extended. Hands should be on the side of the body	10-60 s
	Fold both the legs from the knees and join both the soles together	
	Bring legs toward perineum by pulling legs using both the hands. Gaze in front	
	Hold the position and return back in the same sequence	
Standing postures		
Side bending chakrasana (wheel pose)	Stand erect, legs together, hands by the side of the thighs, and gaze in front	5-10 sec
	Slowly raise right hand from the side, bring it parallel to the shoulder	
	Palms should be facing downwards. Slowly turn the palm upwards and raise your hands up. Fingers should point towards the sky	
	Slowly bend on the left side. Hold and return to original position in the same sequence	
Katichakrasana (standing spinal twist pose)	Repeat with other hand	5-10 s
	Stand with legs apart at a comfortable distance	
	Stretch both the hands in the front, palms facing each other	
Konasana (the angle pose)	Slowly turn toward the right side as much as possible while rotating your waist. Repeat with the opposite side	5-10 s
	Stand erect, legs together, hands by the side of the thighs	
	Make a distance of 2-3 feet between both the legs. Simultaneously, raise both the hands sideways, parallel to the ground	
	Bend laterally toward the right side, touching right hand to the ground while bringing left hand toward the sky	
Vrikshasana (tree pose)	Hold and return to original position, repeat with other side	5-10 s
	Stand erect, legs together, hands by the side of the thighs, and gaze in front	
	Fold right leg from the knee, placing the sole near left thigh joint	
Tadasana (palm tree pose)	Bring hands in Namaskara mudra	5-10 s
	Hold and repeat with other leg	
	Stand erect, legs together, hands by the side of the thighs, and gaze in front	
	Raise both the hands in the front, palms facing each other	
	Bring the hands upward and stretch the whole body toward the sky while raising heels and standing on your toes	
	Return slowly to original position and repeat	

Contd...

Table 2: Contd...

Practices	Technique	Duration
Relaxation postures		
Simhasana (lion pose)	Sit in Vajrasana Slowly raise hips slightly, cross the heel and toes of right leg over the left leg. Place both the hands on respective knees while spreading the fingers and sit on heels Now bring the tongue out of the mouth as much as possible, gaze at the tip of the nose Return back slowly in reverse order	5 rounds
Jivhabandh (tongue lock)	Sit in Padmasana, hands resting comfortably Slowly take the tip of the tongue towards the upper palate of mouth, behind the teeth Simultaneously open the mouth completely Breath through nostrils	5 rounds
Brahmamudra (brahma pose)	Sit in a comfortable position with eyes closed Slowly turn your head to the right while inhaling. Hold and return to the center while exhaling Repeat the same procedure toward the right, up and down position	10 sec each side
Pranayama		
Anuloma-Viloma	Sit in Padmasana Fold your index and middle finger of the right hand toward the inner side of palm Ring finger and little finger should be straight Press right nostril using thumb while inhaling from left nostril Now close the left nostril with ring finger and little finger while exhaling slowly through right nostril after removing the thumb Now inhale through the right nostril and exhale through the left nostril. This completely one round of Anuloma-Viloma Exhalation time should be double than inhalation time	12-15 rounds
Bhramari	Sit in Padmasana Close your eyes Close your ears with both the thumbs Place index finger over the eyebrows, other fingers should cover the eyes. Gently apply pressure Breath in and breath out slowly through nose while making humming sound of OM	12-15 rounds
Ujjayi	Sit in Padmasana Inhale slowly through nostrils and simultaneously constricting the epiglottis. Inhalation should be such that the chest is expanded Slowly exhale	5 rounds
Kapalbhati	Sit in any comfortable sitting pose Exhale through both the nostrils forcibly, while drawing the stomach inside. After one round, inhale through nose and repeat the initial step	2 min
Trataka	Sit in a comfortable sitting position Keep a burning candle at two feet distance from the eyes, at appropriate height same as that of the eyes Gaze at the bright spot of the flame. Do not blink while gazing After a while, close your eyes and relax	1 day for 45 min
Shuddhikriya		
Jalneti	Prepare salt water and fill it into the neti pot Insert the spout inside the left nostril. Tilt your head slightly and open your mouth. Breath through your mouth. Water will flow from the right nostril Repeat with other nostril	

$P < 0.001$); powerlessness ($t = 6.35, P < 0.001$); intrinsic impoverishment ($t = 2.74, P < 0.01$); law status ($t = 2.94, P < 0.001$); and overall occupational stress ($t = 4.33, P < 0.001$) after 7 days of yoga training intervention. However, there was no significant change in unreasonable group and political pressure ($t = 0.57, P > 0.05$); responsibility for persons ($t = 1.71, P > 0.05$); poor peer relations ($t = 0.22, P > 0.05$); strenuous working conditions ($t = 0.35, P > 0.05$); and unprofitability ($t = 1.10, P > 0.05$) after yoga training intervention. The details are presented in Table 3.

Discussion

Thirty-three Kendriya Vidyalaya principals received 1 week of residential yoga training at Kaivalyadham Yoga Institute, Lonavla, India. The study participants showed significant decrease in occupational stress levels at the completion of the training intervention. In fact, most of the subscales of occupational stress also showed significant improvement.

Principals face several psychological stressors that undermine their performance at workplace. In fact,

Table 3: Changes in factors of occupational stress before and after yoga intervention

Variables	Mean±SD		Mean difference (95% CI)	t	P (two-tailed)	Cohen's d
	Before yoga	After yoga				
Role overload	23.72±3.81	17.12±3.95	4.60 (2.87-6.33)	5.42	0.000	0.94
Role ambiguity	9.84±2.70	8.42±1.78	1.42 (0.33-2.51)	2.65	0.012	0.46
Role conflict	13.24±3.26	11.60±2.13	1.63 (0.17-3.09)	2.28	0.029	0.39
Unreasonable group and political pressure	11.48±2.91	11.15±2.79	0.33 (-0.85-1.52)	0.57	0.572	0.09
Responsibility for persons	10.81±2.41	10.21±1.98	0.60 (-0.11-1.32)	1.71	0.096	0.29
Under participation	11.09±3.39	8.60±3.46	2.48 (1.27-3.69)	4.19	0.000	0.73
Powerlessness	8.78±2.43	6.06±2.72	2.72 (1.85-3.6)	6.35	0.000	1.10
Poor peer relations	10.96±1.97	11.06±1.74	-0.09 (-0.92-0.74)	0.22	0.826	0.04
Intrinsic impoverishment	9.33±2.39	8.18±2.48	1.15 (0.29-2.0)	2.74	0.010	0.47
Low status	6.60±1.73	5.60±1.57	1.0 (0.30-1.69)	2.94	0.006	0.51
Strenuous working condition	10.09±2.46	9.90±1.95	0.18 (-0.84-1.21)	0.35	0.722	0.06
Unprofitability	5.36±1.61	5.69±1.53	0.33 (-0.94-0.27)	1.10	0.276	0.19
Overall occupational stress	129.36±18.74	113.63±13.87	15.72 (8.33-23.12)	4.33	0.000	0.75

SD=Standard deviation, CI=Confidence interval

they are forced, more than ever, to become counselors, behavioral managers, and administrators in a contentious environment.^[43] School principals are often unappreciated, constantly under fire from the higher authorities, and are overworked^[44] and thus endure conflict and confrontations on a daily basis.^[45] They often experience extreme stress due to demanding jobs and feel overburdened subsequently.^[46] These stressors lead to several mental and physical health problems in principals. Physical health issues are often related to musculoskeletal disorders such as carpal tunnel syndrome, back pain, eye strain, shoulder pain, neck pain, cervical spondylosis, headaches, hypercholesterolemia, type 2 diabetes, coronary artery disease, prolonged fatigue, gastrointestinal problems, and respiratory problems.^[3] Mental health issues include anxiety, depression, insomnia, and psychosomatic disorders.^[47]

In the present study, the principals of Kendriya Vidyalaya showed increased stress levels at the baseline. Further, earlier studies have indicated that high levels of stress are the root cause of several psychosomatic disorders.^[48] Stress-related disorders may lead to time away from work^[49] as well as on the job turnovers and job injuries.^[50] There are high expectations from principals, which continue to escalate with new rules and guidelines in order to improve student performance and staff improvement. Evaluation of principals' own performance is often evaluated based on student performance as well as school transformation. This leads to buildup of constant pressure on the principals. Nevertheless, various coping strategies such as mindfulness, meditation, yoga, counseling, behavioral therapy, and physical training are implemented in order to combat stress and promote health.^[26,51-55]

The results of this study showed significant improvement in role overload, role ambiguity, role conflict, under participation, powerlessness, intrinsic impoverishment,

low status, and overall occupational stress. This indicates that 1-week residential yoga practices were effective in reducing occupational stress in principals. A similar study was conducted in BSF personnel wherein 9 days of yoga training showed significant improvement in scores of vigilance, a decrease in state anxiety and improved self-rated sleep.^[56] This suggests that short duration of intensive yoga practices can reduce occupational stress in individuals under tremendous pressure.

Earlier studies showed that yoga practices are effective in reducing perceived stress, back pain, and improve psychological well-being at workplace.^[57,58] In fact, yoga practices create a sense of well-being, which leads to improvement in self-confidence and feelings of relaxation.^[59] In addition, the relaxation induced through yoga practices helps to stabilize the autonomic nervous system with a tendency toward parasympathetic dominance.^[60-62] The reduction in occupational stress after yoga in the present study may be due to improved heart rate variability of the participants. Further, the results of the present study are in concurrence with previous studies, wherein yoga practices were found to be effective in reducing stress.^[63-65] The results of the present study suggest that yoga is beneficial in reducing occupational stress among principals. In addition, the findings suggest that conducting yoga workshops in educational institutes can reduce occupational stress in administrators, principals, and students in the long term. Moreover, the yoga intervention will be beneficial for individuals who are under stress due to various reasons.

However, the changes in occupational stress cannot be considered conclusive due to the small sample size, shorter duration of intervention, and absence of control group. Larger randomized controlled trials are needed to determine the broader efficacy of yoga for occupational stress in principals.

Conclusion

Our findings suggest that 1 week of residential yoga training program which includes asanas and pranayama may lead to improvement in occupational stress and its subscales in principals. In practical terms, the present study suggests that holding a 1 week of rigorous yoga training program for administrators is relevant to reduce occupational stress and promote health. Yoga practices equip the administrators to handle stressful working conditions at the workplace and adapt to the various psychological and emotional needs of the job. Thus, yoga practices can be initiated in academic institutions as well as corporate offices as one of the coping strategies to overcome occupational stress and promotion of health and well-being.

Acknowledgment

The authors are grateful to Swami Maheshanandaji, Director of Research, Kaivalyadhama, Shri O. P. Tiwariji, Secretary, Kaivalyadhama, S. M. Y. M. Samiti and Shri Subodh Tiwari, CEO, Kaivalyadhama, for giving constant encouragement to complete research activities. The authors are thankful to yoga teachers of Kaivalyadhama for providing dedicated yoga sessions.

Financial support and sponsorship

Kaivalyadhama Yoga Institute funded this study.

Conflicts of interest

There are no conflicts of interest.

References

1. Almale BD, Vankudre AJ, Bansode-Gokhe SS, Pawar VK. An epidemiologic study of occupational stress factors in Mumbai police personnel. *Indian J Occup Environ Med* 2014;18:109-12.
2. Ghilan K, Al-Taiair A, Yousfi NA, Zubaidi RA, Awadh I, Al-Obeyed Z. Low back pain among female nurses in Yemen. *Int J Occup Med Environ Health* 2013;26:605-14.
3. Joshi TK, Menon KK, Kishore J. Musculoskeletal disorders in industrial workers of Delhi. *Int J Occup Environ Health* 2001;7:217-21.
4. Jayakumar D. Occupational stress and hypertension among railway loco pilots and section controllers. *Indian J Occup Environ Med* 2017;21:23-8.
5. Kamble SV, Phalke DB. Study of occupational stress as a risk factor for various morbidities among policemen. *J Indian Med Assoc* 2011;109:238-40.
6. Costa G. Cardiopathy and stress-inducing factors. *Med Lav* 2004;95:133-9.
7. Miyata M, Tanaka Y, Tsuji S. Occupational stress as the cause of psychosomatic and mental disorders. *J UOEH* 1997;19:297-305.
8. Chen WQ, Wong TW, Yu TS. Direct and interactive effects of occupational stress and coping on ulcer-like symptoms among Chinese male off-shore oil workers. *Am J Ind Med* 2009;52:500-8.
9. Antoniou AS, Polychroni F, Vlachakis AN. Gender and age differences in occupational stress and professional burnout between primary and high school teachers in Greece. *J Manage Psychol* 2006;21:682-90.
10. Moy FM, Hoe VC, Hairi NN, Chu AH, Bulgiba A, Koh D. Determinants and effects of voice disorders among secondary school teachers in peninsular Malaysia using a validated Malay version of VHI-10. *PLoS One* 2015;10:e0141963.
11. Kruse SD. Creating communities of reform: Continuous improvement planning teams. *J Educ Adm* 2001;39:359-83.
12. Shultz KS, Wang M, Olson DA. Role overload and underload in relation to occupational stress and health. *Stress Health* 2010;26:99-111.
13. Wang Y, Ramos A, Wu H, Liu L, Yang X, Wang J, et al. Relationship between occupational stress and burnout among Chinese teachers: A cross-sectional survey in Liaoning, China. *Int Arch Occup Environ Health* 2015;88:589-97.
14. Loerbroks A, Meng H, Chen ML, Herr R, Angerer P, Li J. Primary school teachers in China: Associations of organizational justice and effort-reward imbalance with burnout and intentions to leave the profession in a cross-sectional sample. *Int Arch Occup Environ Health* 2014;87:695-703.
15. Gluschkoff K, Elovainio M, Kinnunen U, Mullola S, Hintsanen M, Keltikangas-Järvinen L, et al. Work stress, poor recovery and burnout in teachers. *Occup Med (Lond)* 2016;66:564-70.
16. Wu H, Liu L, Wang Y, Gao F, Zhao X, Wang L. Factors associated with burnout among Chinese hospital doctors: A cross-sectional study. *BMC Public Health* 2013;13:786.
17. Malamardi SN, Kamath R, Tiwari R, Nair BV, Chandrasekaran V, Phadnis S. Occupational stress and health-related quality of life among public sector bank employees: A cross-sectional study in Mysore, Karnataka, India. *Indian J Occup Environ Med* 2015;19:134-7.
18. Li X, Kan D, Liu L, Shi M, Wang Y, Yang X, et al. The mediating role of psychological capital on the association between occupational stress and job burnout among bank employees in China. *Int J Environ Res Public Health* 2015;12:2984-3001.
19. Papakitsos EC, Argyriou A. Relating leadership and counseling: An example from the Greek educational system. *J Res Initiatives* 2017;2:1-7.
20. de Bruin EI, Formsma AR, Frijstein G, Bögels SM. Mindful2Work: Effects of combined physical exercise, yoga, and mindfulness meditations for stress relieve in employees. A Proof of concept study. *Mindfulness (N Y)* 2017;8:204-17.
21. Michie S. Causes and management of stress at work. *Occup Environ Med* 2002;59:67-72.
22. Rainforth MV, Schneider RH, Nidich SI, Gaylord-King C, Salerno JW, Anderson JW. Stress reduction programs in patients with elevated blood pressure: A systematic review and meta-analysis. *Curr Hypertens Rep* 2007;9:520-8.
23. Bai Z, Chang J, Chen C, Li P, Yang K, Chi I. Investigating the effect of transcendental meditation on blood pressure: A systematic review and meta-analysis. *J Hum Hypertens* 2015;29:653-62.
24. Duraimani S, Schneider RH, Randall OS, Nidich SI, Xu S, Ketete M, et al. Effects of lifestyle modification on telomerase gene expression in hypertensive patients: A pilot trial of stress reduction and health education programs in African Americans. *PLoS One* 2015;10:e0142689.
25. Gura ST. Yoga for stress reduction and injury prevention at work. *Work* 2002;19:3-7.
26. 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.
27. Grensman A, Acharya BD, Wändell P, Nilsson GH, Falkenberg T, Sundin Ö, et al. Effect of traditional yoga, mindfulness-based cognitive therapy, and cognitive behavioral therapy, on health related quality of life: A randomized controlled trial on patients on sick leave because of burnout. *BMC Complement Altern Med* 2018;18:80.
28. Franklin RA, Butler MP, Bentley JA. The physical postures of yoga practices may protect against depressive symptoms, even

- as life stressors increase: A moderation analysis. *Psychol Health Med* 2018;23:870-9.
29. Bhavanani AB, Ramanathan M, Balaji R, Pushpa D. Comparative immediate effect of different yoga asanas on heart rate and blood pressure in healthy young volunteers. *Int J Yoga* 2014;7:89-95.
 30. Louie L. The effectiveness of yoga for depression: A critical literature review. *Issues Ment Health Nurs* 2014;35:265-76.
 31. Tripathi MN, Kumari S, Ganpat TS. Psychophysiological effects of yoga on stress in college students. *J Educ Health Promot* 2018;7:43.
 32. Malathi A, Damodaran A. Stress due to exams in medical students – role of yoga. *Indian J Physiol Pharmacol* 1999;43:218-24.
 33. Godse AS, Shejwal BR, Godse AA. Effects of suryanamaskar on relaxation among college students with high stress in Pune, India. *Int J Yoga* 2015;8:15-21.
 34. Ganpat TS, Dash S, Ramarao NH. Yoga therapy for promoting emotional sensitivity in university students. *J Educ Health Promot* 2014;3:45.
 35. Chong CS, Tsunaka M, Tsang HW, Chan EP, Cheung WM. Effects of yoga on stress management in healthy adults: A systematic review. *Altern Ther Health Med* 2011;17:32-8.
 36. Chiesa A, Serretti A. Mindfulness-based stress reduction for stress management in healthy people: A review and meta-analysis. *J Altern Complement Med* 2009;15:593-600.
 37. Bazzano AN, Anderson CE, Hylton C, Gustat J. Effect of mindfulness and yoga on quality of life for elementary school students and teachers: Results of a randomized controlled school-based study. *Psychol Res Behav Manag* 2018;11:81-9.
 38. Gouda S, Luong MT, Schmidt S, Bauer J. Students and teachers benefit from mindfulness-based stress reduction in a school-embedded pilot study. *Front Psychol* 2016;7:590.
 39. Flook L, Goldberg SB, Pinger L, Bonus K, Davidson RJ. Mindfulness for teachers: A pilot study to assess effects on stress, burnout and teaching efficacy. *Mind Brain Educ* 2013;7. doi:10.1111/mbe.12026.
 40. Srivastava AK, Singh AP. Manual of the Occupational Stress index. Varanasi: Manovaijyanik Parikshan Sansthan; 1984.
 41. Goldstein MR, Lewis GF, Newman R, Brown JM, Bobashev G, Kilpatrick L, et al. Improvements in well-being and vagal tone following a yogic breathing-based life skills workshop in young adults: Two open-trial pilot studies. *Int J Yoga* 2016;9:20-6.
 42. Vempati RP, Telles S. Yoga-based guided relaxation reduces sympathetic activity judged from baseline levels. *Psychol Rep* 2002;90:487-94.
 43. Fraser J, Brock B. Catholic school principal job satisfaction: Keys to retention and recruitment. *J Cathol Educ* 2006;9:425-40.
 44. Roberson FR, Matthews KM. How principals can cope with stress. *NASSP Bull* 1988;72:79-85.
 45. Fallon B. The third world escape from stress and burnout. *NASSP Bull* 1981;65:28-30.
 46. Allison D. Coping with stress in the principalship. *J Educ Adm* 1997;35:39-55.
 47. Salvagioni DA, Melanda FN, Mesas AE, González AD, Gabani FL, Andrade SM. Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. *PLoS One* 2017;12:e0185781.
 48. Salleh MR. Life event, stress and illness. *Malays J Med Sci* 2008;15:9-18.
 49. Sauter SL, Murphy LR, Hurrell JJ Jr. Prevention of work-related psychological disorders. A national strategy proposed by the national institute for occupational safety and health (NIOSH). *Am Psychol* 1990;45:1146-58.
 50. Atkinson W. Stress: Risk management's most serious challenge? *Risk Manage* 2001;51:20-4.
 51. Murphy LR, Sauter SL. The USA Perspective: current issues and trends in the management of work stress. *Aust Psychol* 2003;38:151-7.
 52. Khalsa DS. Stress, meditation, and Alzheimer's disease prevention: Where the evidence stands. *J Alzheimers Dis* 2015;48:1-2.
 53. Navare S. Counseling at work place: A proactive human resource initiative. *Indian J Occup Environ Med* 2008;12:1-2.
 54. Santos-Ruiz A, Robles-Ortega H, Pérez-García M, Peralta-Ramírez MI. Effects of the cognitive-behavioral therapy for stress management on executive function components. *Span J Psychol* 2017;20:E11.
 55. Norris R, Carroll D, Cochrane R. The effects of physical activity and exercise training on psychological stress and well-being in an adolescent population. *J Psychosom Res* 1992;36:55-65.
 56. Telles S, Gupta RK, Verma S, Kala N, Balkrishna A. Changes in vigilance, self rated sleep and state anxiety in military personnel in India following yoga. *BMC Res Notes* 2018;11:518.
 57. Dwivedi U, Kumari S, Akhilesh KB, Nagendra HR. Well-being at workplace through mindfulness: Influence of Yoga practice on positive affect and aggression. *Ayu* 2015;36:375-9.
 58. Hartfiel N, Burton C, Rycroft-Malone J, Clarke G, Havenhand J, Khalsa SB, et al. Yoga for reducing perceived stress and back pain at work. *Occup Med (Lond)* 2012;62:606-12.
 59. Arora S, Bhattacharjee J. Modulation of immune responses in stress by yoga. *Int J Yoga* 2008;1:45-55.
 60. Chu IH, Wu WL, Lin IM, Chang YK, Lin YJ, Yang PC. Effects of yoga on heart rate variability and depressive symptoms in women: A randomized controlled trial. *J Altern Complement Med* 2017;23:310-6.
 61. Telles S, Sarang P. Effects of two yoga based relaxation techniques on Heart Rate Variability (HRV). *Int J Stress Manag* 2006;13:460-75.
 62. Raghuraj P, Ramakrishnan AG, Nagendra HR, Telles S. Effect of two selected yogic breathing techniques of heart rate variability. *Indian J Physiol Pharmacol* 1998;42:467-72.
 63. Ferreira-Vorkapic C, Borba-Pinheiro CJ, Marchioro M, Santana D. The impact of *Yoga nidra* and seated meditation on the mental health of college professors. *Int J Yoga* 2018;11:215-23.
 64. Bhushan S, Sinha P. Yoga Nidra and management of anxiety and hostility. *J Indian Psychol* 2001;19:44-9.
 65. Telles S, Gupta RK, Bhardwaj AK, Singh N, Mishra P, Pal DK, et al. Increased mental well-being and reduced state anxiety in teachers after participation in a residential yoga program. *Med Sci Monit Basic Res* 2018;24:105-12.