

Original Article

Stress among doctors: A cross-sectional study in a tertiary care hospital, North India

Tanvir Kaur Sidhu¹, Prabhjot Kaur¹, Harshpreet Kaur¹, Kamaljeet Kaur²

Departments of ¹Community Medicine and ²General Medicine, Adesh Institute of Medical Sciences and Research, Bathinda, Adesh University, Bathinda, Punjab, India.



***Corresponding author:**

Prabhjot Kaur,
Department of Community
Medicine, Adesh Institute of
Medical Sciences and Research,
Adesh University, Guru Teg
Bahadur Nagar, Handiaya Road,
Barnala - 148101, Punjab, India.

drprabhjot27@gmail.com

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ABSTRACT

Objectives: The objectives of the study were as follows: 1. To study the prevalence of stress among doctors. 2. To find the association of stress and its risk factors.

Materials and Methods: Institution based cross-sectional study was conducted in the tertiary hospital of Punjab. Pre-validated questionnaire was used to assess the demographic variables and stress factors. Perceived Stress Scale-10 was used to assess the stress levels among the doctors.

Results: Of the 203 participants, females (54.7%) outnumbered the males. Mean scores for the stress scale was 18.40 ± 5.4 . Majority of the participants (79.8%) were having moderate stress levels. Statistically significant higher stress levels were found in female doctors (P -value = 0.009) and in the age category of 31-40 years (P -value= 0.04). Emergency duties, intra-departmental working environment, being away from family, not able to have proper personal and family time, lack of sleep were the main risk factors to cause increased stress among doctors. Listening to the music was found to be the main stress buster.

Conclusion: Proper rest and involvement into stress relieving activities like meditation and yoga, conducive working environment are the need of the hour for the burnt-out healthcare providers.

Key Words: Stress, Doctors, Stress-relievers

INTRODUCTION

The modern medical workplace is a complex environment, and doctors respond differently to it, some finding it stimulating and exciting, whereas others become stressed and feel burnt-out from the heavy workload.^[1] Burnout is considered as a distinct state of psychological stress generated by the individual's occupation and/or workplace and is identified as such in the World Health Organization's International Classification of Diseases.^[2,3] The prevalence of burnout has been found to be as high as 75% among doctors.^[4]

Workplace stress affects the performance of the brain, including functions of work performance memory, concentration, and learning. Although small amount of stress can have positive effects by energizing people toward goals, excessive stress may seriously and negatively affect a person's health and job performance. Hospitals are no exceptions; doctors are life savers, and if they come under stress, their efficiency is reduced, directly affecting the lives of a large number of people whom they treat. Stress may originate from personal and professional life of the person, affecting that person as a whole. Occupational stress occurs when job-related factors

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interact with individual factors, resulting in a change in the individual's psychological and/or physiological state.^[5] Stress is closely related to the amount of psychosocial resources that are possessed or thought to be possessed to cope with the requirements of certain demanding situations.^[6] At an individual level, burnout among doctors has been associated with lower career satisfaction, higher absenteeism, greater probability of leaving the profession prematurely or choosing early retirement, and greater risk of experiencing difficulties in interpersonal relationships, such as with family and partners.^[7,8] All these factors affect the working capacity and efficiency of the health-care providers and thus have a deteriorating effect on the doctors, hospitals, and the patients. As stress among doctors is not taken into much consideration and often a neglected topic, so this study was planned with objectives of estimating the prevalence of stress among doctors in our region and to find the associated risk factors for the same.

MATERIALS AND METHODS

A cross-sectional study was conducted by including all the doctors from all the departments of a tertiary care institution. Complete enlistment procedure was followed for the enrolment of the participants which included junior residents, postgraduate residents, senior residents, consultants, professors, and head of the department. Out of the total list, 203 participants responded and included in this research work. However, those who were not available and did not consent to participate were excluded from the study.

Sample size

According to a study conducted among private medical practitioners in Vellore District, Tamil Nadu, the prevalence of high job stress was found to be 35.5% in doctors.^[9] Using the formula $n = Z^2 p(1-p)/d^2$ (where $Z = 1.96$ at 95% confidence interval, $p =$ expected prevalence, $d =$ relative precision – 20% of the expected prevalence, i.e., 7%) and taking the prevalence as above mentioned, minimum sample size came out to be 180. On adding 10% for the incomplete proforma, a sample size of 200 was taken for this study.

Methodology

A structured, pre-validated, self-administered questionnaire was used to evaluate the demographic variables and the factors related to the stress in the medical professionals [ANNEXURE 1]. Perceived Stress Scale-10 (PSS-10) was used to find out the levels of the stress in the doctors based on the perceptions about their life according to their past 1 month experience.^[10] All those who were willing to participate and were the employee of the institution were enrolled in the

study. Incomplete proforma and those doctors who could not be contacted in three consecutive visits were excluded from the study. Data collected were analyzed using the Microsoft Excel spreadsheet (version 2010). Demographic variables were mentioned in terms of frequency and percentages. PSS scores were obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1, and 4 = 0) to the four positively stated items (items 4, 5, 7, and 8) and then summing across all scale items. Scores obtained were mentioned as means and categorization of the stress levels was done according to the protocol (scores of 0–13 - low stress levels, 14–26 score - moderate stress levels, and 27–40 scores - high perceived stress levels). Chi-square, *t*-test, and one-way ANOVA were used to find out the association of the stress levels with the different demographic variables.

Ethical consideration

The study was initiated after taking the ethical approval from the Institutional Ethics Committee. Informed verbal consent was taken from each participant after briefing them about the type of the research and assuring the anonymity of the data collected.

RESULTS

In this study, a total of 203 participants were evaluated. Females (54.7%) outnumbered the males (45.3%). Mean age the participants was found to be 35.83 ± 12.92 years. Mean of total number of years in the job was 9.8 years, however, mean years of present job were 3.2 years [Table 1].

More number of females were found in the non-clinical branches (included both pre-clinical and paraclinical branches); on the other side, males outnumbered the females in the clinical field [Figure 1].

In our study, median screen time of the study participants was found to be 3 h, with range of ½–12 h. Maximum participants (94.6%) claimed of not having any addiction habits followed by alcohol addiction (4.4%) and smoking (1%).

Stress levels were assessed using the PSS-10 on the basis of their past 1 month experience. Mean score was found 18.40 ± 5.4 with a range of 2–35. Majority (79.8%) of the participants were having moderate stress levels followed by low stress levels (13.8%) and high perceived stress was found in 6.4% of the medical professionals [Table 2].

Association of the mean stress scores with-in different demographic variables was calculated using unpaired *t*-test. Females showed higher stress levels, which were statistically significant with $P < 0.05$. However, department (clinical/non-clinical) and marital status of the participants had no association with the stress levels [Table 3].

Association of the mean stress scores with age categories, designation, and addiction habits of the participants was calculated using the one-way ANOVA test. Statistical significant stress levels were found in the age category of 31–40 years of age ($P = 0.04$). This phase is settlement phase/phase of establishment after the postgraduation, thus adding to the stress levels of the doctors. *Post hoc* Bonferroni test was run to find out the intergroup differences in the age categories. The age group of 51–60 years had statistically

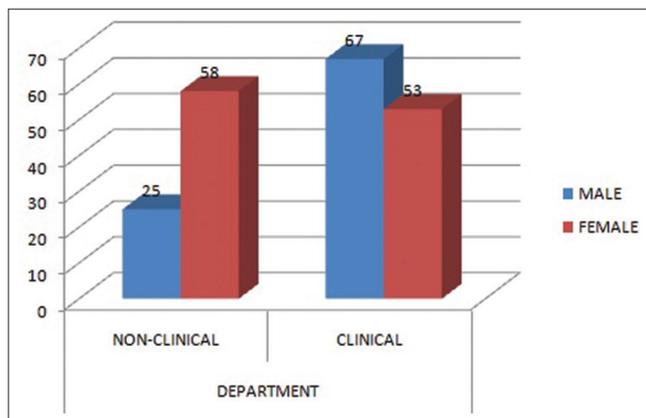


Figure 1: Gender distribution according to department.

Table 1: Demographic distribution of the participants.

Variable	Subgroup	Frequency (n=203)	Percentage
Gender	Male	92	45.3
	Female	111	54.7
Age category (in years)	20–30	96	47.3
	31–40	56	27.6
	41–50	25	12.3
	51–60	05	2.5
	61–70	21	10.3
Working as	JR	59	29.1
	PG	24	11.8
	SR	25	12.3
	AP	40	19.7
	Associate	21	10.3
	Professor	24	11.8
	HOD	10	4.9
Department	Non-clinical	83	40.9
	Clinical	120	59.1
Marital status	Married	130	64
	Unmarried	73	36

Table 2: Distribution of total stress scores.

Stress levels	Frequency (n=203)	Percentage
Low stress (0–13)	28	13.8
Moderate stress (14–26)	162	79.8
High perceived stress (27–40)	13	6.4

significant lower stress levels as compared to the age groups of 20–30 years and 31–40 years. However, no other age group showed such difference. The designation of the participants and addiction habits had no impact on the stress levels of the individuals [Table 4].

Correlation of the mean stress scores was found non-significant both with the number of years in job ($r = -0.067$, $P = 0.340$) and screen time of the participants ($r = 0.060$, $P = 0.392$). However, many other factors in this study were found to be statistically significant in increasing the stress levels among doctors. Professional factors included emergency duties and intradepartmental working environment, which causes significant stress among the doctors. However, problems in the personal life such as staying away from the family, not able to give adequate time to their family life, any sickness in the family, lack of proper sleep and rest, and not having time to pursue their hobbies – all induces stress among the medical personnel [Table 5].

In the present study, listening to the music was found to be the most common stress reliever followed by exercise. However, multiple options were being used by the

Table 3: Association of the mean stress scores with the demographic variables.

Variable	Subgroup	Mean±2SD	t	P value
Gender	Male	17.30±5.783	-2.653	0.009**
	Female	19.32±5.016		
Department	Non-clinical	18.55±5.886	0.326	0.745
	Clinical	18.30±5.162		
Marital status	Married	17.92±5.311	-1.710	0.089
	Unmarried	19.27±5.640		

Table 4: Association of the mean stress scores with age, designation, and addiction habits of the participants.

Variable	Subgroup	Mean±2SD	F	P value
Age category (in years)	20–30	19.13±4.878	4.037	0.04*
	31–40	19.14±6.083		
	41–50	17.56±4.454		
	51–60	12.20±8.672		
	61–70	15.62±4.944		
Designation	JR	19.31±5.754	0.890	0.503
	PG	19.21±3.956		
	SR	17.96±5.682		
	AP	18.60±5.555		
	Associate	16.90±7.006		
	Professor	17.38±4.614		
	HOD	17.10±3.725		
Addiction habits	No addiction	18.40±5.545	0.270	0.840
	Alcohol	17.22±4.711		
	Smoking	19.00±1.414		
	Others	19.63±5.125		

Table 5: Association of the risk factors with stress levels.

Question	Low stress levels (%)	Moderate stress levels (%)	High perceived stress (%)	Chi-square value	P value
Q 1. Do sick patients raise your stress levels?	6 (8.4)	59 (83.2)	6 (8.4)	3.659	0.454
Q 2. Do critically sick patients cause a stress?	8 (7.6)	92 (87.6)	5 (4.8)	8.789	0.067
Q 3. Do you get upset with night shifts?	5 (6.4)	66 (84.6)	7 (9.0)	8.377	0.079
Q 4. Do emergency services leaves you exhausted?	3 (4.0)	68 (89.4)	5 (6.6)	10.065	0.039*
Q 5. Is dealing with the patient's relatives is a stress inducer for you?	4 (6.0)	56 (83.6)	7 (10.4)	8.196	0.085
Q 6. Do inadequate or late wages makes you upset?	20 (12.5)	130 (81.2)	10 (6.3)	1.142	0.565
Q 7. Do increased working hours more than 8 h make you restless?	14 (11.3)	105 (84.7)	5 (4.0)	5.194	0.074
Q 8. Does pressure from superiors affect your mood?	14 (10.6)	107 (81.1)	11 (8.3)	5.048	0.080
Q 9. Does intradepartmental work environment causes stress?	9 (9.0)	78 (70.0)	13 (13.0)	16.753	0.000230**
Q 10. Getting job done from subordinates is a difficult task?	7 (9.7)	61 (84.7)	4 (5.6)	1.804	0.406
Q 11. Is there any gender harassment in your working place?	1 (7.7)	11 (84.6)	1 (7.7)	2.224	0.329
Q 12. Do you feel competition from your colleagues?	4 (9.1)	39 (88.6)	1 (2.3)	2.947	0.229
Q 13. Does staying away from family makes you distressed?	9 (7.9)	94 (82.5)	11 (9.6)	11.118	0.025*
Q 14. Are you able to give proper time to your family life?	23 (19.6)	89 (76.1)	5 (4.3)	9.328	0.009**
Q 15. Are you able to attend social functions?	19 (16.2)	92 (78.6)	6 (5.2)	1.947	0.378
Q 16. Is there any sickness in your family affects your performance?	12 (13.2)	69 (75.8)	10 (11.0)	5.786	0.055*
Q 17. Are you suffering from any lifestyle-related disorder?	4 (11.4)	28 (80.0)	3 (8.6)	0.482	0.786
Q 18. Are you suffering from lack of proper rest and sleep?	5 (6.3)	63 (79.7)	11 (14.0)	16.645	0.000243**
Q 19. Are you able to take proper nutrition?	23 (16.5)	110 (79.1)	6 (4.4)	5.448	0.066
Q 20. Do you feel increasing age affects your mood?	6 (9.0)	53 (79.1)	8 (11.9)	6.490	0.039*
Q 21. Do you find time to pursue your hobbies?	22 (22.7)	72 (74.2)	3 (3.1)	14.542	0.001**

participants to overcome their stress [Figure 2]. Other stress relievers included –spiritual activities, watching TV, hobbies shopping, relaxation activities, and spending time with family members.

DISCUSSION

In the present study, a total of 203 participants were evaluated; majority being the females (54.7%). Maximum were in the age category of 20–30 years (47.3%) with mean age of 35.83 + 12.92 years. However, in other similar studies conducted in India, maximum participants were males and age group of 25–35 years was the most common age category.^[11-13]

In our study, stress levels were assessed using PSS-10 scale and mean stress scores were found 18.40 ± 5.4. Majority (79.8%) of the participants were having moderate stress levels. Statistically significant of the stress levels was found in female doctors (P = 0.009) and in the age category of 31–40 years (P = 0.04). Emergency duties, intradepartmental working environment, being away from family, not able to have proper personal and family time, and lack of sleep were the main factors to cause increased stress among doctors.

However, in a study conducted by Sathiya *et al.*, stress levels of the doctors were compared with the nurses. This

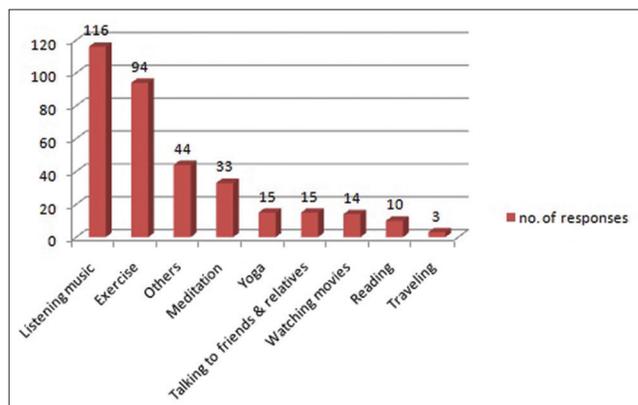


Figure 2: Stress relievers among participants.

study concluded that higher stress levels were found in the doctors with mean scores of 18.35 (± 4.7). Inadequacies of staff and resources, sleep deprivation, confronting constant emotional assault, smoking, and physical suffering were found as important stressors. Gender was not associated with stress levels of the participants.^[12] In another conducted by Khoo *et al.* in Malaysia, taking pediatricians as the study participants, more emotional breakdown was found in the junior/fresher doctors with the main reason of stress to establish themselves in the field. Other sources of the stress

“dealing with difficult parents” (80.2%), “feeling of inadequate knowledge to meet work demands” (72.6%), “crowded wards” (70.6%), “fear of medicolegal issues” (70.1%), and “dealing with acute intensive care children” (68.5%). Workplace factors such as unrealistic goals and disrespectful interactions with colleagues or subordinates were significantly associated with emotional exhaustion.^[14]

The stress levels were seen higher in the doctors those who were in the beginning phase of their careers. In a study conducted by Shriram *et al.*, male medical interns showed higher levels of the PSS-10 scores as compared to female counterparts.^[15] In similar study conducted by Chatterjee in 2020, clinical interns showed maximum levels of the stress with mean scores of 20.4 ± 5.2 followed by house residents (17.5 ± 5.1).^[13] This showed that beginning of the career induces more stress to the health-care providers. Similar findings were seen in the studies conducted by Sahasrabudde *et al.*^[11] and Lorga *et al.*^[16] In other study, main stress factors were mentioned as heavy work load with long duty hours (48.3%), poor accommodation and food (32%), low stipend (41%), and lack of social and family life (22.8%).^[11] However, physical environment, work volume, poor pay, lack of appreciation, lack of support, opportunities, promotion, patient expectation, and deadline were the main stressors in the study conducted taking Iran doctors as the participants.^[17]

In our study, only 4.4% of participants claimed of having alcohol addiction followed by smoking habits. Similar findings of the vicious cycle of stress, alcohol, and smoking were seen in a study conducted by Sathiya *et al.* and Lorga *et al.*^[12,16] In our study, listening to the music was found to be stress reliever followed by majority of the participants. In a study conducted by Prasad *et al.*, before and after stress evaluation were done in the doctors after the 6-week yoga and meditation program.^[18] It showed improvement in the inner content, happiness, confidence levels, patience, and reduced fatigue in the participants. In a systematic review, experts have emphasized on the support-based interventions to facilitate the development of the meaningful strategies for managing occupational stress in the longer term, to assist medical doctors in coping with work that is, by its nature, inherently challenging.^[19]

Limitations

Subjective variations of the individuals could be the possible limiting factor of this study. Sample size was not that large, moreover, only one tertiary center covered. Multicentric study along with relaxing intervention provisions in between would have better future option.

CONCLUSION

Moderate stress levels were found in this study, thus affecting the doctors in various ways. Proper rest and involvement into

stress-relieving activities such as meditation and yoga and conducive working environment are the need of the hour for the burnout health-care providers.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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ANNEXURE 1 – PERCEIVED STRESS SCALE

PSS-10 Item Instructions: The questions in this scale ask you about your feelings and thoughts during the past month. In each case, please indicate with a check how often you felt or thought a certain way.

1. In the past month, how often have you been upset because of something that happened unexpectedly?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often
2. In the past month, how often have you felt that you were unable to control the important things in your life?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often
3. In the past month, how often have you felt nervous and “stressed”?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often
4. In the past month, how often have you felt confident about your ability to handle your personal problems?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often
5. In the past month, how often have you felt that things were going your way?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often
6. In the past month, how often have you found that you could not cope with all the things that you had to do?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often
7. In the past month, how often have you been able to control irritations in your life?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often
8. In the past month, how often have you felt that you were on top of things?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often
9. In the past month, how often have you been angered because of things that were outside of your control?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often
10. In the past month, how often have you felt difficulties were piling up so high that you could not overcome them?
___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

PSS-10 scores are obtained by reversing the scores on the four positive items, for example, 0 = 4, 1 = 3, 2 = 2, etc., and then summing across all 10 items. Items 4, 5, 7, and 8 are the positively stated items.