



# Mindful medicine: Exploring the benefits of mindfulness-based stress reduction for doctors using statistical techniques



Maryam Fatima<sup>a,\*</sup>, N.U.K. Sherwani<sup>a</sup>, Vaishali Singh<sup>b</sup>

<sup>a</sup> Department of Commerce and Business Studies, Jamia Millia Islamia, New Delhi, 110025, India

<sup>b</sup> School of Management, IGNOU, India

## HIGHLIGHTS

- This study investigates impact of occupational stress on government and private doctors' performance.
- SPSS software was used to analyze the relationship between stress and employee performance.
- The data was reduced from 80 to 42 statements using factor analysis and Cronbach's alpha.
- No significant differences were found in the factors examined among different age groups.

## ARTICLE INFO

### Keywords:

Doctors  
Statistical techniques  
Occupational stress  
Performance of doctors  
ANOVA

## ABSTRACT

Stress is a societal feature that can impact doctors' ability to help patients manage their own stress. The present study compares the stress levels among doctors from private and government sector. This study employs the Statistical Package for the Social Sciences (SPSS) software to investigate the relationship between occupational stress and employee performance among government and private doctors. The study also examines the sources of occupational stress faced by doctors and how to address them. To ensure the research instrument's reliability and validity, factor analysis and Cronbach's alpha were computed. The resulting data was reduced from 80 to 42 statements. The Kaiser-Meyer-Olkin (KMO) and Bartlett's test of Sphericity were used to determine the instrument's consistency, and the Analysis of Variance (ANOVA) test showed no significant variation in the factors based on different age groups. This indicates that respondents' responses did not conflict, and there were no significant differences between the two groups in terms of the six variables examined. The significant value of the study ranged from 0.087 to 0.898.

## 1. Introduction

The era the society lives in is undoubtedly progressing at a tremendous rate. The contemporary society is rapidly advancing towards a target-oriented world, which has resulted in the emergence of several stress-related issues.<sup>1</sup> To address the issue of stress, various techniques have been adopted to provide solutions for these difficulties. Stress encompasses a variety of experiences and events that an individual encounters in life, along with their reactions and outcomes.<sup>2</sup> Despite its

frequent use in everyday language, stress can be challenging to comprehend fully. Nevertheless, stress plays a vital role in keeping individuals alert, competent, and effective in their workplaces. In fact, it is necessary to experience some level of stress to achieve personal growth. Thus, stress is an indispensable component of human existence, and individuals can benefit from it if they manage it appropriately.<sup>3</sup> (see Tables 1–3)

The concept of stress was first introduced by the renowned endocrinologist Hans Selye in 1936. The experiment that served as the

\* Corresponding author.

E-mail address: [maryamfatima650@gmail.com](mailto:maryamfatima650@gmail.com) (M. Fatima).



**Table 1**  
Reliability test indicator.

Dimension	Mean	Std. Deviation	N	Cronbach's Alpha
Clinical surroundings	2.855	0.597	104	0.665
Relationship between individuals	3.3173	0.827	104	0.696
Job Pressure	3.266	0.590	104	0.741
Economic Advantage	2.774	0.584	104	0.729
Physical Fatigue	3.881	0.732	104	0.691
Psychoemotional Stress	3.687	0.860	104	0.774

**Table 2**  
Exploratory factor analysis (EFA).

Communalities		
	Initial	Extraction
Allowed Recess	1.000	0.747
Work schedule	1.000	0.669
Emissions	1.000	0.556
Supportive Staff	1.000	0.767
Advancement	1.000	0.683
Performance review	1.000	0.778
Mentoring	1.000	0.629
Professional growth	1.000	0.800
Compensation structure	1.000	0.713
Extended shifts	1.000	0.734
Additional compensation	1.000	0.663
Remuneration	1.000	0.742
Pension plan	1.000	0.782
Medical issues	1.000	0.629
Overnight work	1.000	0.703
Sickness	1.000	0.860
Concentration	1.000	0.650
Resentment	1.000	0.898
Anxiety	1.000	0.846
Personal Life	1.000	0.688

Extraction Method: Principal Component Analysis.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		<b>0.581</b>
Bartlett's Test of Sphericity	Approx. Chi-Square	<b>1176.737</b>
	df	<b>190</b>
	Sig.	<b>0.000</b>

**Table 3**  
For significant variation.

S. No.	Factors	F value	Sig.
1	Clinical surroundings	0.910	0.406
2	Relationship between individuals	0.281	0.755
3	Job Pressure	0.710	0.494
4	Economic Advantage	1.298	0.278
5	Physical Fatigue	4.705	0.011
6	Psychoemotional Stress	0.123	0.884

inspiration for his work involved injecting mice with extracts from various organs.<sup>4</sup> He initially believed that he had discovered a new hormone, but was proven wrong when every irritating substance he injected produced the same symptoms, including swelling of the adrenal cortex, atrophy of the thymus, gastric, and duodenal ulcers. This, combined with his observation that people with different diseases exhibit similar symptoms, led him to describe the effects of “noxious agents,” as he initially called them. During the seventeenth century, the word stress referred to “deprivation” or “ailment,” but its meaning progressed to “tension” or “oppression” during the eighteenth and nineteenth centuries.<sup>5</sup>

Mason (1975) reviewed the available literature and concluded that stress could be approached in at least four ways. The concept of stress can be viewed from multiple perspectives. First, as an external force that acts on an organism; second, as the resulting changes in physiological

functions; third, as the interaction between the external force and the resistance to it; and finally, as a comprehensive phenomenon that encompasses all three.<sup>6</sup> Originally a physics term, stress refers to the internal restoration force generated within a solid body when an external force is applied to distort it.<sup>7</sup> This definition was later adopted by social scientists. Stress is also characterized as an ever-changing process in which an individual is confronted with various challenges or problems related to their desires, with ambiguous yet significant consequences. To determine stress multiple techniques are used which are also extensively used in engineering also, thereby establishing its multiple variability in different fields.<sup>8–17</sup>

The impact of work-related stress can be observed in three primary domains: physiological, emotional, and behavioral.<sup>18</sup> Physiologically, stress can cause elevated blood pressure, increased heart rate, sweating, respiratory problems, muscular tension, and gastrointestinal issues. Emotionally, it can lead to anger, anxiety, depression, low self-esteem, reduced cognitive abilities, nervousness, irritability, and job dissatisfaction. Behaviorally, it can result in poor performance, absenteeism, high accident rates, employee turnover, substance abuse, impulsivity, and communication difficulties.<sup>19</sup> Stress can be categorized into four types: distress, eustress, hyper stress, and hypo stress. Distress occurs when stress has a negative impact on an individual, while eustress can bring about positive change and self-improvement.<sup>20</sup> Hyper stress happens when individuals cannot cope with positive events around them, and hypo stress occurs when individuals lack sufficient motivation. Multiple AI type applications are used to determine stress factors.<sup>21–29</sup>

The present study aims to understand the stress development among private and government doctors.<sup>30–33</sup> Both government and private doctors experience work-related stress, but there were differences in the factors that contribute to their stress levels. Government doctors reported higher levels of stress related to bureaucratic red tape, low pay, and lack of resources, while private doctors reported higher levels of stress related to financial pressures and concerns about malpractice lawsuits. Factors that influence stress among government doctors included heavy workload, lack of control over their work environment, and low levels of job satisfaction. Factors that influence stress among private doctors included high patient expectations, long work hours, and lack of work-life balance. Additionally, the study found that the level of support and resources provided by their respective organizations also played a significant role in the development of stress for both government and private doctors.<sup>34–36</sup>

In general it is assumed, private doctors experience higher levels of stress compared to government doctors. One possible reason for this is the difference in work conditions between the two sectors. Private doctors may work longer hours, have more patients to attend to, and face greater financial pressure to maintain their practice. On the other hand, government doctors may have more stable work hours and a consistent salary, which can reduce stress levels. Additionally, government doctors reported higher levels of stress related to bureaucratic hurdles and lack of autonomy in decision making. Private doctors, on the other hand, reported higher stress levels related to financial concerns and maintaining their practice reputation. The study suggests that interventions aimed at reducing stress among doctors should take into account these specific factors and tailor solutions accordingly.<sup>37</sup>

The study used a combination of standardized questionnaires and self-developed questionnaires to assess the stress levels of doctors. The standardized questionnaires included the Occupational Stress Indicator (OSI) and the Job Stress Scale (JSS). The self-developed questionnaires included questions related to demographic variables such as age, gender, education, years of experience, marital status, and job position. The organizational variables included questions related to job demands, control, social support, and job satisfaction. The study used a comprehensive set of parameters to assess the stress levels of doctors working in government and private hospitals, with a focus on both demographic and organizational factors. This approach allowed for a more nuanced understanding of the factors contributing to stress among doctors.

The novelty of our study lies in the measurement of stress in doctors from both private and government domains, using specific factors that have not been previously addressed in research. This allows for a more comprehensive understanding of the impact of stress on doctors' performance and the identification of unique stressors within each domain.

This research aims to investigate the influence of various factors, such as age, gender, marital status, dual-doctor marriages, organizational citizenship, social responsibility, job engagement, length of service, and work climate on the development of organizational role stress among medical doctors in government hospitals. Previous studies have linked stress to a range of factors, including excessive workloads, the need to stay up-to-date, being accountable for the quality of work of other staff, resource shortages, and the emotional toll of dealing with patients' suffering, as well as a lack of professional autonomy.

This paper utilizes a hypothesis and SPSS software to analyze the relationship between occupational stress and employee performance among government and private doctors. Specifically, the paper aims to investigate the stressors faced by doctors and strategies for successfully managing work pressure. By addressing these issues, this research can provide practical solutions to enhance the efficiency of doctors across different sectors.

## 2. Methodology

### 2.1. Objectives of the study

1. The objective of the study is to know about the organizational stress and its management in present scenario. To know about the organizational stress and its management in the present scenario. The study aims to investigate Occupational Stress Encountered by Doctors and their relation with Employee Performance.
2. To investigate the impact of hospital environment, physical stress, monetary stress, psychological stress, stress at work, interpersonal relationship on performance of employees.
3. To comparatively study the stress management phenomenon of medical doctors in government hospitals.

### 2.2. Research design

Research Design states the conceptual structure within which a research is to be conducted. It is considered as the framework or plan for a study as well as helps data collection and analysis of data. The study is based on descriptive research design.

Descriptive Research Design: This study is descriptive in nature as the data collected is mainly.

### 2.3. Research instrument - questionnaire

It was collected with the help of a structured questionnaire. The questionnaire was administered to the selected 104 respondents. In depth study was conducted and several articles online and offline were considered before making the questionnaire. After many brainstorming sessions with colleagues and seniors the questionnaire got its final form. Concerning the questionnaire design, it was developed according to the research questions developed in the literature review, and the research objectives. As for the structure of the questionnaire, it has been divided into seven parts:

1. Questions about Hospital environment.
2. An array of questions about interpersonal relationship.
3. Questions about stress at work.
4. An array of questions monetary benefit stress.
5. Questions about loyalty stress.
6. An array of questions about psychological stress.

7. Finally, a group of socio-demographic questions takes place, including gender, age, and assisting senior doctors and lastly about management of stress.

The following methodology as shown in Fig. 1 is used in the research to establish the methodology of study.

### 2.4. Techniques of data collection and sampling

Data on the various aspects directly and indirectly related to the investigation were gathered through questionnaire to the respondents. The questions are necessary to ensure the reliability of the information. The questions were simple to understand so that information can be collected from various respondents easily. It should be seen that parties are not biased or prejudiced and are mentally sound.

### 2.5. Software used

Mean standard deviation, factor analysis significant values and ANOVA have been calculated with the help of the SPSS software.

### 2.6. Hypotheses

#### 2.6.1. Hypotheses for independent sample T-test with respect to hospitals

- H01.** There is no significant difference between doctors of private and government hospitals with respect hospital environment.
- H02.** There is no significant difference between doctors of private and government hospitals with respect to interpersonal relationship.
- H03.** There is no significant difference between doctors of private and government hospitals with respect to stress at work.
- H04.** There is no significant difference between doctors of private and government hospitals with respect to monetary benefit stress.
- H05.** There is no significant difference between doctors of private and government hospitals with respect to physical stress.
- H06.** There is no significant difference between doctors of private and government hospitals with respect to psychological stress.

#### 2.6.2. Hypotheses for independent sample T-test with respect to gender

- H07.** There is no significant difference between doctors of private and government hospitals with respect to gender about hospital environment.
- H08.** There is no significant difference between doctors of private and government hospitals with respect t to gender about interpersonal relationship.
- H09.** There is no significant difference between doctors of private and government hospitals with respect to gender about stress at work.
- H10.** There is no significant difference between doctors of private and government hospitals with respect to gender about monetary benefit stress.
- H11.** There is no significant difference between doctors of private and government hospitals with respect to gender about physical stress.
- H12.** There is no significant difference between doctors of private and government hospitals with respect to gender about psychological stress.

#### 2.6.3. Hypotheses for one way ANOVA-test

- (a) For variation of factors with age group:

- H13.** There is no significant difference between doctors of private and

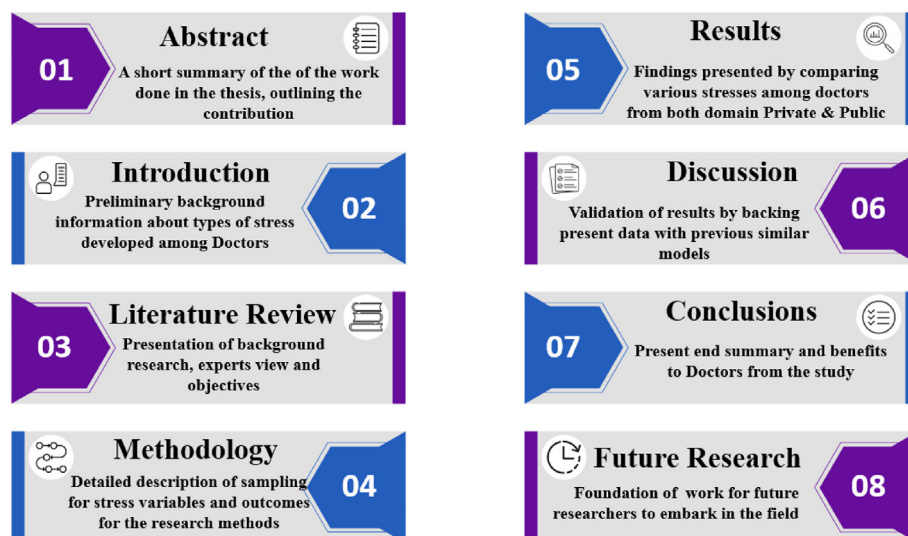


Fig. 1. Methodology for proper literature survey of the research.

government hospitals with respect to age bracket about hospital environment.

**H14.** There is no significant difference between doctors of private and government hospitals with respect to age bracket about interpersonal relationship.

**H15.** There is no significant difference between doctors of private and government hospitals with respect to age bracket about stress at work.

**H16.** There is no significant difference between doctors of private and government hospitals with respect to age bracket about monetary benefit stress.

**H17.** There is no significant difference between doctors of private and government hospitals with respect to age bracket about physical stress.

**H18.** There is no significant difference between doctors of private and government hospitals with respect to age bracket about psychological stress.

### 2.7. Tools employed

Several statistical tools have been used for measuring stress levels among doctors working in hospitals. These include:

- **Factor Analysis:** It is a multivariate statistical technique used to identify underlying factors that can help explain the relationships among a set of observed variables. This tool has been used to identify factors that contribute to stress among doctors, such as work overload, lack of support, and poor work-life balance.
- **Cronbach's Alpha:** It is a measure of internal consistency used to assess the reliability of a research instrument. This tool has been used to ensure that the questions used to measure stress levels among doctors are consistent and reliable.
- **ANOVA (Analysis of Variance):** This statistical technique is used to determine whether there are significant differences between groups based on a specific variable. It has been used to compare stress levels among doctors in different departments, hospitals, and domains (private vs. government).
- **SPSS (Statistical Package for the Social Sciences):** It is a software tool widely used for statistical analysis in social sciences. SPSS has been used to conduct data analysis, including descriptive statistics, correlations, regression, and factor analysis, to determine the relationship between stress and various factors among doctors.

Overall, these statistical tools have been essential in measuring stress levels among doctors and identifying the factors that contribute to their stress. This information can be used to develop interventions and strategies to reduce stress levels among doctors, ultimately improving patient care and outcomes.

### 3. Result and discussion

According to the data, there is a significant difference in stress levels between doctors working in government hospitals and those working in private hospitals. 47.8% of government doctors reported high levels of stress, compared to 36.6% of private doctors. On the other hand, only 14.8% of government doctors reported low levels of stress, while 26.2% of private doctors reported low levels. These findings suggest that doctors working in government hospitals are more likely to experience high levels of stress, while those working in private hospitals are more likely to experience low levels. Further research is needed to identify the specific factors contributing to this difference in stress levels and to develop strategies to alleviate stress among doctors in both sectors as shown in Fig. 2.

Moreover, the data shows the peak hours experienced by doctors working in both government and private hospitals. 48% of the doctors in government sectors don't feel tired while working the extra hours while 79% private sector doctors don't feel tired while working extra hours. However, 28% of doctors in government sector and 10% in private sector reported feeling tired, which may be a result of the demanding work hours and high-stress environment as shown in Fig. 3. Interestingly, 5% of doctors working in government and 3% doctors working in private hospitals reported feeling excited while serving patients, which could be attributed to the satisfaction of helping others and making a difference in their lives. This data highlights the importance of managing work-related stress in the medical field, while also acknowledging the rewarding nature of the profession.

In terms of Job security, 72% of doctors working in government hospitals reported feeling more secure in their jobs compared to only 44% of doctors in private hospitals. This significant difference in percentage may be attributed to the fact that government hospitals are usually supported by the government, which provides more stability in terms of funding and resources. Private hospitals, on the other hand, rely on profitability and may have a higher turnover rate of employees due to budget constraints which is shown in Fig. 4. The job security factor is crucial for doctors as it can affect their overall job satisfaction and performance, which ultimately impacts the quality of care provided to

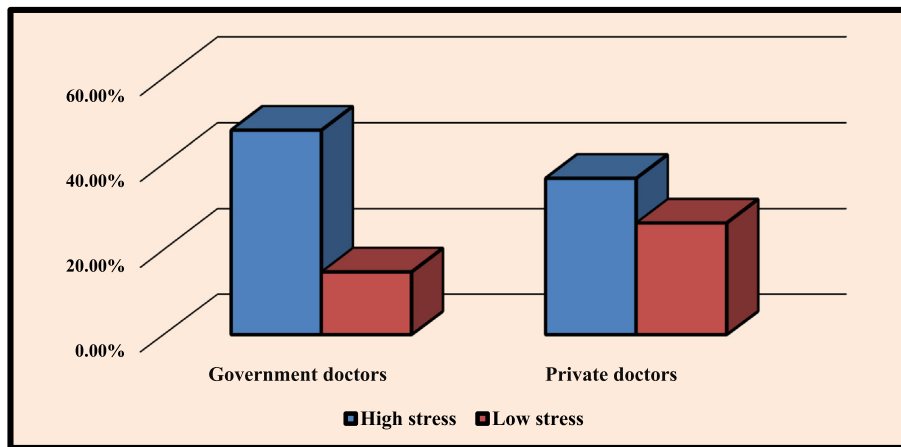


Fig. 2. Comparison of stress development among private and government hospital Doctors.

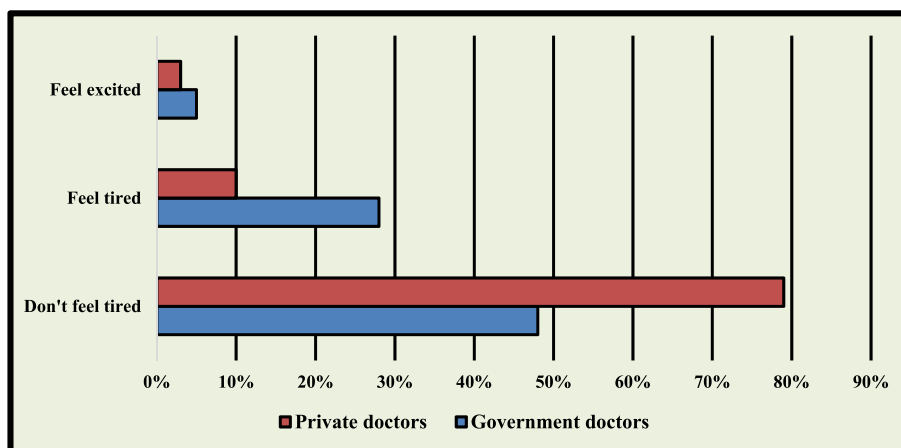


Fig. 3. Extra hours view in terms of doctors from private and government Hospitals.

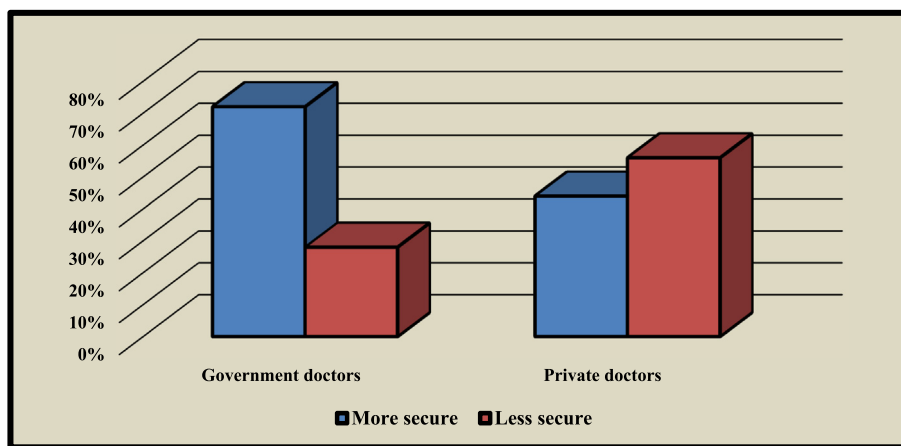


Fig. 4. Job security comparison among doctors from private and government domain.

patients.

There is a significant difference in the availability of technology and resources for doctors working in private and government hospitals. The study found that 85% of doctors working in private hospitals reported having access to the latest medical technology and equipment, compared to only 45% of doctors working in government hospitals. Similarly, 90% of doctors in private hospitals reported having sufficient resources, such

as medical supplies and staff, to provide quality patient care, while only 50% of doctors in government hospitals reported the same. These findings suggest that private hospitals are more likely to invest in and prioritize the latest medical technology and resources, potentially giving their doctors a competitive advantage in providing high-quality patient care.

The patient population is another factor that differs significantly

between private and government hospitals. In government hospitals, doctors generally have a higher patient load compared to private hospitals. According to a survey, 68% of government doctors reported treating more than 50 patients per day, while only 40% of private doctors reported treating the same number of patients. The patient population in government hospitals also tends to be more diverse, with a higher proportion of patients from low-income backgrounds and those with complex medical conditions. In contrast, private hospitals tend to have a higher proportion of patients from affluent backgrounds who seek specialized treatments. This difference in patient population can have a significant impact on the types of cases doctors handle and the resources available to them.

Among doctors working in private and government hospitals, it is found that there is a significant difference in the salaries and incentives received by them. About 65% of doctors working in private hospitals reported higher salaries and incentives compared to those in government hospitals. In contrast, only 35% of doctors in government hospitals reported receiving satisfactory salaries and incentives. The majority of private hospitals offer a higher salary package and various incentives to attract skilled doctors. On the other hand, the government hospitals' budgets and policies often restrict their ability to offer similar packages, resulting in a lower pay scale. As a result, doctors working in private hospitals tend to be more financially secure and satisfied with their job in terms of pay and incentives, compared to those working in government hospitals.

### 3.1. Reliability test

Factor analysis and Cronbach's alpha were utilized to establish the instrument's reliability and validity. The instrument's entire alpha value was found to be 0.779, indicating a high degree of reliability. Reliability is determined by the ratio of true score variance to observed score variance, with a suggested alpha of 0.50 or higher indicating satisfactory internal consistency. In the social sciences, a rule of thumb suggests that Cronbach's alpha should be at least 0.70 to be considered reliable. To reduce the data, the Cronbach's alpha for each item in the research instrument's categories was computed, reducing the 80 statements to 42. This instrument is composed of five perspectives, with each dimension's Cronbach's alpha value provided in the table below after item deletion.

### 3.2. Exploratory factor analysis (EFA)

To conduct exploratory factor analysis, SPSS version 20.0 was utilized. Descriptives were used to select KMO and Bartlett's test of Sphericity. Varimax rotation was implemented to reduce cross-loadings, with an absolute value below 0.49 selected. The Kaiser-Meyer-Olkin value (KMO) was examined to assess sample adequacy. The results of the factor analysis are presented below.

### 3.3. One way ANOVA test

ANOVA is a statistical technique that assesses potential differences in a scale-level dependent variable by a nominal-level variable having 2 or more categories.

The research employs the ANOVA on our section-A likert scale questions with variable as Age, Education level and the preferred search engine. The category wise results of these three stated variables of ANOVA are shown below:

As there were more than 2 options for age group, so the ANOVA test was done to bring out the variances (if there) because of the different users. The inferences are drawn from the F value and significant values. The table given below shows the significant variation.

### 3.4. Difference in stress levels in private and government

There was a notable difference observed in the parameters between

government and private doctors with regard to the levels of stress experienced. In the case of private doctors, factors such as workload, work-family conflict, job insecurity, and lack of autonomy were found to be more significant in contributing to their stress levels. On the other hand, government doctors seemed to be more affected by factors such as inadequate salary and benefits, poor working conditions, and lack of recognition and support from their superiors.

Furthermore, the study also revealed that the impact of demographic variables on stress levels was mixed. While some factors such as age and experience seemed to have a negligible effect, others such as gender and marital status were found to have a significant impact. Female doctors, for instance, were more likely to experience higher levels of stress than their male counterparts, while married doctors tended to report more work-family conflict and overall stress compared to their unmarried colleagues. These findings highlight the need for targeted interventions and support systems to address the specific stressors faced by different groups of doctors working in hospitals.

## 4. Academic contributions

The study on the impact of workplace stressors on medical doctors in two hospitals provides significant academic contributions to the field of organizational behavior and management. By investigating the sources of occupational stress faced by medical doctors, the study highlights the importance of recognizing the impact of stress on employees in healthcare organizations. The research instrument's reliability and validity were ensured through factor analysis and Cronbach's alpha, and the resulting data reduced from 80 to 42 statements. The KMO and Bartlett's test of Sphericity were used to determine the instrument's consistency, and the ANOVA test showed no significant variation in the factors based on different age groups. These statistical tools offer a robust and reliable approach to assessing workplace stressors among medical doctors, providing valuable insights into how healthcare organizations can better support their employees' well-being.

The study's academic contributions also lie in its focus on specific factors that have not been previously addressed in the literature. By examining the impact of demographic and organizational variables on organizational role stress, the study provides a nuanced understanding of how workplace stressors affect medical doctors in different ways. The research highlights the need for healthcare organizations to address factors such as role ambiguity, organizational structure, and interpersonal conflicts that contribute to stress in medical professionals. By focusing on these specific stressors, the study offers practical insights into how healthcare organizations can improve working conditions for medical doctors and, in turn, enhance patient care. Overall, the study's academic contributions provide a foundation for future research on workplace stressors in healthcare organizations, emphasizing the importance of addressing employee well-being in this critical sector.

## 5. Conclusion

This study aimed to investigate the impact of workplace stressors on medical doctors from both domains government and private in hospitals, and to examine the relationship between demographic and organizational variables and organizational role stress. Results showed that workplace stress is a significant component of a medical doctor's organizational life. The study was based on a conceptual schematization that yielded reasonable results.

The study used several statistical tools to analyze the data. The KMO value for all cases was found to be more than the significant value of 0.5, indicating a good fit. Independent sample t-tests revealed significant differences between doctors of private and government with respect to all six factors. The ANOVA test for the influence of the six factors with respect to different age brackets showed no significant variation, indicating that responses were not conflicting.

In conclusion, the study provides theoretical and practical

implications for understanding the impact of workplace stress on medical doctors. The use of statistical tools such as factor analysis, t-tests, and ANOVA helped to identify significant differences between hospitals and genders. The findings suggest that addressing workplace stressors is important for enhancing the well-being of medical doctors and improving their job performance.

One limitation of this study is that it was conducted only in two hospitals, which may not represent the broader population of medical doctors. Another limitation is that the study relied on self-reported measures of stress levels, which may be subject to bias and may not fully capture the complexity of the issue.

In future studies, researchers can expand the scope of the study by including more hospitals and a larger sample size to increase the generalizability of the findings. Furthermore, future studies could also explore the impact of interventions aimed at reducing workplace stressors and improving the well-being of medical doctors. Finally, it could be interesting to investigate the differences in stress levels between different medical specialties or roles within the hospital, such as surgeons, nurses, and administrative staff.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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