

Gender-Based Comparison of Perceived Stress among Employees of different Departments in an Engineering College

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Abstract- The purpose of the study was to compare the stress levels of male and female among different departments of an engineering college. A total number of 179 employees both male and female in which 28 from polytechnic (18 male and 10 female), 63 from engineering (36 male and 27 female), 52 from management (27 male and 25 female), and 36 from science & technology (7 male and 29 female) have been included in the study. All males and females who were selected for the study were in the age group of 20 years to 60 years. The results of the study shows that no significant difference can be found conclusively in perceived stress levels found across gender or college type. Although minor variations were observed, particularly a slightly higher vulnerability among female teachers, however, the overall pattern indicates a uniformly moderate level of stress among teachers.

Keywords -Perceived Stress Scale, Polytechnic, Engineering, Management and Science & Technology

I. INTRODUCTION

Stress is a natural reaction to specific events and demands; it is a state of mental tension or worry caused by a difficult situation. Stress, whether biological, physiological or psychological, is a human's response to a stressor, such as an environmental condition or change in life circumstances. There are two hormones that humans produce during stressful situations i.e. adrenaline and cortisol. The two major systems that respond to stress in humans and most mammals are autonomic nervous system and hypothalamic-pituitary-adrenal (HPA) axis. Everyone experiences stress to some degree, however, the way we respond to stress, makes a big difference to our overall well-being. Anything that poses a real or perceived challenge to a person's well-being can cause stress, it can come from financial pressures, work, relationships and any other situations.

When too many stressors are at one time or when the body becomes triggered too easily, it can undermine a person's physical and mental health and become harmful. Stress is essential to survival and it can be a motivator too. It is the body's fight or flight mechanism that describes how and when to respond to danger. All stress is not bad, it can help a person from getting hurt or accomplish some tasks. Every person has different strategies to handle stressful situations. If something happens a few times or once, stress can be short-term and if something happens in continuation, stress can be a long term response. Long term or chronic stress can make someone sick,

both physically or mentally, whereas our body can handle short-term effects easily.

It is necessary to manage stress timely, for this reason the first thing is how to identify the symptoms, but it can be a harder task. Many of us are experiencing stress, but we do not take action until we get sick. Stress is the body's natural defense against any perceived danger, and to face the danger the body is flooded with hormones. To get to safety as fast, the body activates resources that help people to stay and confront the challenge.

The body produces a larger quantity of chemicals i.e. epinephrine, norepinephrine, and cortisol. The physical reactions triggered by these are alertness, heightened muscle preparedness, increased blood pressure and sweating. Norepinephrine and epinephrine also cause a faster heart rate. A person's ability to respond to a potentially challenging situation is improved by all these factors. Aggressive behaviour, noises, scary moments in movies or a speeding car are environmental factors that are triggered by the stressors

II. PHYSICAL EFFECTS OF STRESS

Stress slows down some normal bodily functions, i.e. the immune system and digestive system. During stress reaction, the body changes as increased blood pressure and pulse, increased breathing, muscle become more tense, decreased sleep due to a heightened state of alertness

Types of Stress

As recognized by the National Institute of Mental Health there are two types of stress i.e. acute stress and chronic stress. There are three types of stressor also identified as sudden, disruptive changes, routine stress, such as homework or financial responsibilities and traumatic stress, which can occur due to severe accident, an environmental disaster or an assault.

Acute Stress- Acute Stress is a common form of stress, it starts when people face upcoming challenges in the near future or they consider the pressures of events that have recently occurred and it has a clear and immediate solution. Although there are difficult challenges that people face, it also has many ways to get out of the situation. Acute stress causes short term damage, includes headaches, moderate amount of distress, upset stomach and tension. If the instances of acute stress repeated again and again, it can become harmful and chronic.

Chronic Stress-Chronic stress develops over a long period and it is more harmful than acute stress. There are many situations in one's life such as a dysfunctional family, an unhappy marriage, ongoing poverty or a traumatic experience early in life may contribute to chronic stress. It is difficult for the body to return to a normal level of stress hormone activity from the chronic stress, due to which started many problems such as decreased sleep, cardiovascular, immune, respiratory and reproductive. If a person is in continued stress, it increases the risk for physical condition i.e. high blood pressure, type 2 diabetes and heart disease. When the stress becomes chronic it can develop anxiety, depression, post traumatic stress disorder and other mental health disorders. If chronic stress can continue unnoticed, it can become used to feeling hopeless and agitated.

Causes of Stress-If something is stressful for one person, it may not be stressful for another. People react differently to stressful situations. It depends on the tolerance level of people, for some people, it is only thinking about a smaller trigger can cause stress. How a person reacts to stressors may also be affected by previous experiences. There are major life events that can trigger stress such as lack of time or money, family problems, retirement, relationships, moving home, marriage and divorce. Besides these there are other causes of stress such as driving in heavy traffic or fear of an accident, abortion or pregnancy loss, pregnancy and becoming a parent, fear of crime or problems with neighbors, uncertainty or waiting for an important outcome or excessive noise, pollution and overcrowding. After facing any kind of abuse or trauma, some people experience ongoing stress

Symptoms and complications of stress-There are some physical effects of stress that can be included as pain in the back or chest, fainting, sweating, headaches, cramps, needless sensations and nervous twitches. Some emotional reactions of stress can include burnout, fatigue, anger, irritability, a feeling of insecurity, restlessness, nail biting, forgetfulness, sadness and concentration. There are certain behaviours that can be associated with stress such as drug and alcohol misuse, food cravings and eating too much or too little, relationship problems, higher tobacco consumption, frequent crying, sudden angry outbursts and social withdrawal. Chronic stress may become several complications such as depression, heart disease, sleeping difficulties, muscular aches, stomach upset, and lower immunity against disease.

Treatment of Stress-The treatment includes medications, sometimes doctors will not usually prescribe medications for coping with stress, unless they are treating an underlying illness, such as depression or an anxiety disorder, therapies that may also help a person to relax. For managing stress, people follow lifestyle measures that can help them to prevent stress induced feelings such as exercise, reducing the intake of alcohol, drugs and caffeine, nutrition, priority management, organizing time, breathing and relaxation, sharing feelings and concerns with family, friends and work colleagues. It is important to acknowledge the signs and symptoms for taking action. People follow different activities to relax them such as going for a walk, spending time with a friend or loved one, listening to music, joining a gym and reading a book. Some people develop networks of social support like joining a club, a local community, religious organization or talking to neighbors. If someone does not have the time or energy for hobbies, they should try some new activities, people can take ideas from their support network. If anyone finds that stress is affecting their daily life they should seek professional help as a psychiatrist or a psychologist, they may help with stress management training.

There are some effective stress management techniques that help to remove stress as relaxation techniques, including deep breathing, mindfulness meditation, guided imagery, progressive muscle relaxation, listening to music, yoga, massage and spending time in nature. Some lifestyle changes such as healthy diet, regular exercise, time management, setting boundaries, adequate sleep and engaging in hobbies and activities are helpful in stress. People may also seek support from professionals, connect with loved ones or join support groups in such situations. If anyone wants to manage their stress they should be able to identify triggers, challenge their negative thoughts or take a break from the situations.

III. REVIEW OF LITERATURE

Mali Dr. SM (2025) in a study named “Study the Productivity and Perceived Stress among Remote and In-office Employees” investigated the productivity and the degree of perceived stress among people who are doing work from home and regular office going. The study found that the productivity of remote workers was smaller as compared to the in-office workers. Productivity of the female workers was smaller as compared to male workers. The level of perceived stress was smaller in regular office going workers than that of remote workers. Female employees had less level of perceived stress as compared to male employees.

Kechil Rafizah et al. (2024), in a study named “A Study on the Degree of Perceived Stress among Staff in Public University” delves into perceived stress experienced by staff in public universities. The study concluded that demographics such as education, age and location play a role, whereas gender surprisingly did not show significant differences in stress. A moderate level of stress was consistently found with various occupational groups. Further, study reported those above 50 reported lower stress and also showed better coping mechanisms. People living in urban areas with middle income status showed elevated stress, might be due to financial pressures.

Atienza YIM and Dominado Noel L (2023) in a study entitled “International Journal of Multidisciplinary: applied business and education research” evaluated teachers' perceived stress and anxiety levels. The study opened and addressed the gap among the perceived stress and anxiety levels of the participants. It was found from the study that the participants perceived stress contributed to low self-esteem and life irritations. The study also found that participants encountered worry, nervousness and tension along with that there is no relationship between the demographic profiles of the respondents and their perception of stress and anxiety.

In a study entitled “Understanding The Current Perceived Stress Pattern in Jaipur in Indian Metropolitan Cities and Comparison of Perceived Stress Levels Between Working Women and Homemaker Age Groups 21 to 50 Years” conducted by Agarwal Ashima (2022), understand and measured the pattern of perceived perceived stress levels in working and non-working women. Moderate levels of stress

were found in all working women. The reason behind it was worry, anxiety or apprehension. Further, study found that there were common stressors that affected both working and non-working women, and the working women were able to better cope with the stress as the proportion of non-working women.

Centola GM (2018) conducted a study on “Stress in the Workplace: Results from a Perceived Stress Survey of ART Laboratory Professionals”. The purpose of this study was to determine the levels of stress of the group of ART laboratory staff. It was found from the study that a relatively high level of stress was experienced by ART lab professionals.

Ramesh N, Joseph B, Kiran PR, Kurian J, Babu AT (2016), conducted a study entitled “Perceived Professional Stress Levels among Employees in an Information Technology Company, Bangalore”. The study assesses the stress levels and factors associated with stress among employees working in an IT company. It was found from the study that as per the professional life stress test no respondents were needing immediate interventions for stress. No direct association between stress and work experience, gender, duration of break time and number of dependents were found. The most common symptoms were considered as insomnia among the employees.

Objectives

To compare the perceived stress among employees of different departments (Polytechnic, Engineering, Management and Science & Technology) in an engineering college.

Hypothesis

There is no significant difference in perceived stress among employees of different departments (Polytechnic, Engineering, Management and Science & Technology) in an engineering college.

IV. METHOD

Sample

The study was based on employees of different departments (Polytechnic, Engineering, Management and Science & Technology) of IIMT College of Engineering, Greater Noida, Uttar Pradesh. The sample of present study consisted of 179 employees both male and female. Out of 179 employees, 28 from polytechnic (18 male and 10 female), 63 from engineering (36 male and 27 female), 52 from management (27 male and 25 female) and 36 from science and technology (7 male and 29

female) were selected. The age of the males and females was from 20 years to 60 years.

Tools

The Perceived Stress Scale (Pss) Is A Classic Stress Assessment Instrument, The Tool Originally Developed In 1983, It Is A Popular Choice For Helping Us To Understand How Different Situations Affect Our Feelings And Thoughts During The Last Month. In Each Case, One Asked To Indicate How Often Someone Felt Or Thought A Certain Way. Although Some Of The Questions Are Similar In Scale, Yet There Are Differences Between Them And One Should Treat Each One As A Separate Question. It Is Made Up Of Ten Questions, And Each Question Is Graded On A Five-Point Likert Scale (0 For Never And 4 For Very Often). Pss-10 Is Constructed To Identify General Stressors And The Ability To Cope. The Item No. 4, 5, 7 And 8 Included Positive Expressions, Hence Their Scores Are Coded Reversely. The Total Scores Of All The Items Determines The Pss-10 Score. Higher Scores Means Higher Stress. The Scale Consists Of Ten Questions, With A Total Possible Score Ranging From 0 To 40. Based On The Score, Stress Levels Can Be Interpreted As, A Score Of 0-13 Indicates Low Perceived Stress, 14-26 Suggests

Moderate Stress And 27-40 Reflects High Perceived Stress. It Is Important To Note That The Pss-10 Does Not Have A Diagnostic Threshold That Clearly Distinguishes Between Individuals Who Are Stressed And Those Who Are Not. Although, It Is Not A Clinical Diagnosis, Yet Provides A General Indication Of How Individuals Perceive Stress In Their Lives.

Procedure

The sampling was based on a simple random sampling method. No incentives were awarded and voluntary participation was emphasised. The study emphasised that responses are anonymous and confidential, and no identifying information was requested from participants. All participants gave informed consent prior to starting the study. A google form was created and administered with demographic details and the Perceived Stress Scale (PSS) with standardized instructions.

V. RESULTS AND DISCUSSION

Hypothesis 1 There is no significant difference in perceived stress among employees (males & females) of different departments (Polytechnic, Engineering, Management and Science & Technology) in an engineering college.

Department	Participant	Low n (%)	Moderate n (%)	High n (%)
Polytechnic	Male	5 (27.7)	13 (72.3)	-
	Female	2 (20)	7 (70)	1 (10)
Engineering	Male	12 (33.4)	23 (63.8)	1 (2.8)
	Female	2 (7.4)	25 (92.6)	-
Management	Male	4 (14.8)	23 (85.2)	-
	Female	3 (12)	21 (84)	1 (4)
Science & Technology	Male	1 (14.2)	5 (71.6)	1 (14.2)
	Female	4 (13.7)	22 (75.9)	3 (10.4)

The purpose of the present study was to compare the perceived stress among employees of different departments (Polytechnic, Engineering, Management and Science & Technology) in an engineering college. A total number of 179 employees from

different departments of IIMT College of Engineering, Greater Noida were included in the study. Among the employees 28 were selected from polytechnic department (18 male and 10 female), 63 were selected from engineering department (36

male and 27 female), 52 were selected from management department (27 male and 25 female), and 36 were selected from science & technology department (7 male and 29 female). The age of the males and females was between 20 years to 60 years. The perceived stress scale was used to collect data. The analysis of results based on that there is no significant difference in perceived stress among employees (males and females) of different departments (polytechnic, engineering, management and science & technology) in an engineering college are presented.

The results of the perceived stress scale indicate that a majority of teachers in the polytechnic college experience moderate levels of stress, irrespective of gender. In the college of polytechnic, close to one fourth (27.7) percent of male participants experienced low stress and less than three fourth (72.3) percent, experienced moderate level of stress. On the other hand, female participants expressed 20 percent of low level of stress, 70 percent of moderate level of stress and only 10 percent reported high level of stress. Overall, the findings suggests that occupational demands and work related pressures contribute significantly to moderate stress, female teachers exhibit slightly higher vulnerability to elevated stress. These results highlight the importance of institutional support, stress management programs and workplace well-being initiatives to promote teacher's mental health, job satisfaction and professional effectiveness.

The findings from the perceived stress scale for teachers in the college of engineering indicate that moderate stress is the most common level of stress among both male and female teachers. The data reported that close to one third i.e. 33.4 percent of male participants faced low levels of stress, 63.8 percent of male experienced moderate levels of stress and only 2.8 percent of male participants reported having high levels of stress. As compared to female participants, 7.4 percent were faced with a low level of stress whereas most of the female participants reported moderate levels of stress. Thus, the results suggest that teaching related responsibilities and institutional demands contribute to a sustained level of moderate stress among engineering college teachers, with female teachers appearing to be more vulnerable to stress compared to their male counterparts. However, there is a need for preventive stress management strategies, supportive work environments and faculty well-being programs to enhance mental health, job satisfaction and professional efficiency.

The data from college of management shows that the majority of both male and female teachers experienced a moderate level of stress. The above table depicts that among male teachers 14.8 percent reported a low level of stress, while a large majority i.e. 85.2 percent experienced a moderate level of stress. However, none of the male teachers reported a high level of stress. On the other hand, among female teachers, 12 percent experienced low levels of stress, and the majority i.e. 84 percent reported a moderate level of stress, whereas only a small proportion such as 4 percent of female teachers reported high levels of stress. Overall, the findings suggests that moderate level of stress is predominant among college of management teachers, with minimal representation of high stress, particularly among female participants. This suggests that while extreme stress levels are uncommon, work-related pressures consistently contribute to moderate stress, emphasizing the importance of stress management and faculty support initiatives within management colleges.

Further, the data for college of science & technology indicates that moderate level of stress is the most commonly experienced among both male and female participants. As one can see from the above table, among male teachers 14.2 percent reported a low level of stress, while a majority i.e. 71.6 percent experienced a moderate level of stress. An equal proportion 14.2 percent of male participants reported a high level of stress. However, among female participants, 13.7 percent experienced low levels of stress, while the majority i.e. 75.9 percent reported moderate levels of stress. whereas, only a smaller proportion as 10.4 percent of female participants experienced a high level of stress. Thus, the findings depicts that teachers in college of science & technology predominantly experience moderate levels of stress, with a noticeable minority reporting level of stress in both genders. This pattern may reflect the demanding nature of college of science & technology disciplines, highlighting the need for targeted stress management interventions and institutional support to prevent escalation of stress levels.

The overall findings of the perceived stress scale across the colleges of Polytechnic, Engineering, Management and Science & Technology suggest that moderate level of stress is the most prevalent level of stress among teachers, irrespective of gender and academic discipline. Across all institutions, a substantial proportion of teachers reported moderate stress, suggesting that routine occupational demands, academic

responsibilities, workload and institutional expectations contribute consistently to sustained stress levels.

Male teachers across colleges generally reported a higher proportion of low stress and minimal high stress, while female teachers showed relatively greater vulnerability to elevated stress levels, greater vulnerability to elevated stress levels, with small but notable proportions reporting high stress, particularly in college of Polytechnic, Management and Science & Technology. Although high stress levels were reported by a minority of participants, their presence highlights the need for early identification and preventive intervention.

Overall these findings emphasize that teaching in higher education is associated with continuous moderate stress, regardless of the stream, with discipline-specific demands influencing stress intensity in certain cases, such as Science & Technology. The results underscore the importance of institutional support systems, structured stress management programs, faculty well-being initiatives and supportive work environments to promote teacher's mental health, job satisfaction and professional effectiveness and to prevent moderate stress from progressing into severe psychological distress.

VI. CONCLUSION

Based on the descriptive data presented, no significant difference can be found conclusively in perceived stress levels found across gender or college type. Although minor variations were observed, particularly a slightly higher vulnerability among female teachers, however, the overall pattern indicates a uniformly moderate level of stress among teachers. Based on the descriptive data presented, no significant difference can be found conclusively in perceived stress levels found across gender or college type. Although minor variations were observed, particularly a slightly higher vulnerability among female teachers, however, the overall pattern indicates a uniformly moderate level of stress among teachers.

VII. STRENGTH AND LIMITATIONS

The present study has several strengths such as use of a standardized tool, inclusion of multiple colleges, gender representation, ethical data collection, convenient and efficient data collection, and focus on occupational stress.

Despite all the above strength the study also has some limitations such as self-report bias, limited sample size, cross-sectional design, lack of inferential statistics, restricted variables, and dependence on internet access.

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