

**STUDY ON CAUSES OF STRESS AMONG THE  
EMPLOYEES AND ITS EFFECT ON THE EMPLOYEE  
PERFORMANCE AT THE WORKPLACE IN AN  
INTERNATIONAL AGRICULTURAL RESEARCH  
INSTITUTE, HYDERABAD, TELANGANA, INDIA**

**S.Gousia**

*Assistant Professor, Department of M.B.A,*

*Rajeev Gandhi Memorial College of Engineering & Technology, Nandyal*

**ABSTRACT**

*The stress has significant psychological, physiological and performance effects on human resources of an organization. The contribution of the researchers on stress was significant due to the dynamic social factors and life style changes. Though, the stress has some ill health effects not all the stresses are destructive in nature. The good stress – eustress creates positive reaction to stress that generates within person a desire to achieve and overcome a challenge and allows to perform best of his/her ability. The most of the studies carried out and reported the effects of stress on human resources and organizations are limited to either Information Technology or Banking sector. The work stress is found in all the sectors. The focus of this paper is to throw a light on the wide spread silent issue the “Stress” and its effects on Employees in an International Agricultural Research Institute, Hyderabad, Telangana, India and suggest appropriate coping strategies. A survey of 200 employees of the institute carried out to assess the job related, organization related, individual related and physiological reactions to stress and its effect on employees’ performance. We have applied the descriptive analysis, correlation techniques and regression analysis to arrive the conclusions. To measure the reliability of the scale used for this research, and internal consistencies of the survey questionnaire, the reliability static Cronbach's alpha is used. The study concluded that the occupational stress is having moderate impact on the employees’ performance of the institute, the job related stress in general and the stress factor job security in particular. The employees’ reaction to the stress – physiological factors also has moderate effect the performance of an employee. Health-wise, some employees had developed chronic neck and back pain, an effect of long sitting hours at work.*

**Keywords:** *Job related stress, Individual related stress, performance, Cronbach’s alpha, stress*

## **I. INTRODUCTION**

The origin of the concept of stress predates antiquity. The term derived from the Latin word “*Stringere*” to mean hardship, strain, adversity or affliction. The occupational stress has been of great concern to employees and other stakeholders of organizations. The researchers agree that occupational stress is a serious problem in many organizations (Cooper and Cartwright, 1994; Varca, 1999; Ornelas and Kleiner, 2003). The cost of occupational stress is very high in many organizations in recent times. For instance, the International Labour Organisation (ILO) reports that inefficiencies arising from occupational stress may cost up to 10 percent of a country’s GNP (Midgley, 1996). Occupational stress is defined as the perception of a discrepancy between environmental demands (stressors) and individual capacities to fill these demands (Topper, 2007; Vermut and Steensma, 2005; Ornelas and Kleiner, 2003). Christo and Pienaar (2006) argued that the causes of occupational stress include perceived loss of job and security, sitting for long periods of time or heavy lifting, lack of safety, complexity of repetitiveness and lack of autonomy in the job. In addition, occupational stress is caused by lack of resources and equipment; work schedules— such as working late or overtime and organizational climate are considered as contributors to employees stress. Occupational stress often shows high dissatisfaction among the employees, job mobility, burnout, poor work performance and less effective interpersonal relations at work (Manshor, Rodrigue, and Chong, 2003). Johnson (2001) similarly argued that interventions like identifying or determining the signs of stress, identifying the possible causes for the signs and developing possible proposed solutions for each signs are required.

Stress is man’s adaptive reaction to an outward situation which would lead to physical, mental and behavioral changes. According to Matthews (2001) stress can be experienced from four basic sources – the environment, social stressors, physiological and thoughts. In today’s world, the degree of stress increased owing to urbanization, globalization that results into cut-throat competition. Stress is inescapable part of modern life, work place is becoming a volatile stress factory for most employees and it is rightly called as the Age of anxiety.

Though stress harms human beings in several ways, not all the stresses are destructive in nature. Appropriate amount of stress can actually trigger your passion for work, tap your latent abilities and even ignite inspirations. Stress is a dynamic condition in which an individual is confronted with an opportunity, demand, or resource related to what the individual desired and for which the outcome is perceived to be both uncertain and important (Schuler, 1980).

The psychological stressors influence the health through emotional, cognitive, behavioural and psychological factors (Levi, 1998). The role ambiguity, role overload, role conflict and strenuous working conditions have positive relations and are the common causes of the stress (Chand and Sethi, 1997). The type of work assigned to an employee is also one of the stress factor and those engaged in work related to them able to cope the stress better than those who are assigned unrelated work (Tread Gold, 1999). Stress in organizations has been defined in terms of misfit between a person’s skills and abilities and demands of his/her job and as a misfit in terms of a person’s needs not being fulfilled by his job environment. Cooper and Marshall (1976) are of the view that by occupational stress is meant environmental factors or stressors such as work overload, role conflict, role ambiguity, and poor working conditions associated with a particular job.

### What is stress?

Stress is the body's nonspecific response to a demand placed on it (Hans Selye) Stress as a condition or feeling experienced when a person perceives that demands exceed the personal and social resources the individual is able to mobilize. (Richard S. Lazarus) Nervous tension that results from internal conflicts from a wide range of external situations (D'Souza)

## II. REVIEW OF LITERATURE

Hans Selye first introduced the concept of stress in to the life sciences in 1936. Calpan et al., (1975) view of an individual, two role systems the role space and role set. The dynamic interrelationship between the self and various roles an individual occupies and among these roles, the role space and role set is expectations of significant roles. Those individual himself/herself that is the pattern of relationship between role being considered and other role, which creates considerable stress based on the situations. Pareek (1983) pioneered work on the role stress by identifying ten different types of organizational roles stresses. The General Adaptation Syndrome has been widely held has a comprehensive model to explain the stress phenomenon (Hans Selye, 1956).

Several theories were proposed to stress and its effects. Osipow and Spokane (1987) described six work roles that they felt were stressful regardless of an individual's actual vocational choice. Role Overload (RO) —measures the extent to which job demands exceed resources (personal and workplace) and the extent to which the individual is able to accomplish workloads (Osipow, 1998). Role overload can result in an employee —experiencing anger and frustration toward persons believed responsible for the overload in work (Marini et al., 1995).

Krausman, Crowell, and Wilson (2002) reported finding physiological arousal measures that corresponded to both the perception of exertion and cognitive performance decrements. Anxiety is the most common stress condition by which memory researchers have examined memory performance (Eysenck, 1979; 1985). The negative effects of this stressor on working memory are well established (Ashcraft & Kirk, 2001; Eysenck, 1992; Eysenck, 1997). Ashcraft and Kirk (2001) also reported that individuals high in anxiety tend to be slower and more deliberate in their processing of various aspects of mathematical functions. Time pressure has been found to degrade performance across a variety of cognitive domains. The range of performance domain that have been found to suffer under time pressure include: Judgment and decision making (Rothstein and Markowitz, 1982; Walton and McKersie, 1965; Zakay and Wooller, (1984), visual search behavior, vigilance and attention processes (Wickens, Stokes, Barnett and Hyman, 1991), Memory recall strategies (Campbell and Austin, 2002), concession making and integrative agreements (Rubin & Brown, 1975; Walton and McKersie, 1965), and subject's self-rating of performance (Greenwood-Ericksen and Ganey, 2002). Cercarelli and Ryan (1996) indicated that, —fatigue involves a diminished capacity for work and possibly decrements in attention, perceptions, decision making, and skill performance. —perhaps must simply put, —fatigue may refer to feeling tired, sleepy, or exhausted (NASA, 1996). Wager, Feldman, Hussy (2003) found that employees who worked under two differently perceived supervisors in the same workplace has significant health effects. Some studies has identified links between problematic characteristic of work and an increased risk of cardiovascular

disease effect with bullying and harsh supervision, and lower the blood pressure working with a favourably perceived supervisor (Bosma et al., 1998).

A comprehensive review of the bullying literature conducted on behalf of the Health Safety Laboratory by Beswick, Gore, and Palferman (2006) demonstrates that numerous studies have found significant associations between experiences of bullying and psychological strain (e.g) depression, anxiety, suicidal thoughts post-traumatic stress; low self-esteem); physical strain (e.g chronic fatigue, sleep difficulties, and stomach problems) and sickness absence. Frequent emotional distress in the form of anger, anxiety, and depression can have damaging effects on the cardiovascular system (Orth-Gomér et al., 2000).

A study on the effect of stress on performance of employees in Commercial bank of Ceylon concluded that stress is having an impact on bank employee's performance at the same the influence of organizational related stress is higher than the job and individual related stress (Karunanithy and Ponnampalam 2013).

### III. OBJECTIVES

#### 3.1 Background and cause for the study

The Indian city Hyderabad, with over 15 million population, is a hub for IT industries having >500 IT companies and about 1 million working in IT sector. The city is reported some suicides mainly IT staff for known and unknown reasons, however it was found that mostly due to stress related factors. During August 2015 one of the Vice-President (Strategic affairs) of an IT company committed suicide because of work load and stress. Mr Rajnan Das, CEO and MD of SAP Indian sub-continent died because of massive heart attack. The Cardiologist mentioned "Barring Stress" control he did everything right but used sleep to only less than 5 hours and never controlled his stress, this is the main reason for the massive stroke and this message was widely circulated through Whatsapp (<http://www.studycafe.in/2012/01/why-ranjan-das-ceo-of-sap-india-passed.html>). A wide range of studies on stress related effects were carried out Information Technology, Banking and Industrial sectors. On 4<sup>th</sup> August 2015 a regional channel narrated that over one lakh employees from IT sector the quit the jobs and settle over other low paid jobs, because of stress and its ill-health effects. As stress is common for all the employees we have pursued this study at the Institute where employees spend considerable time on their job at least 13 hours for work and commuting.

#### 3.2 Research question:

What are the main sources of stress and how do they influence International Agricultural Research Institute employees performance in Telangana, Hyderabad, India

#### 3.3 Objectives

- To identify the causes of stress among the employees and its effect on performance at their workplace.
- To evaluate management competencies for controlling and reducing stress at work.
- To assess how work related stress and its physiological reaction

Based on the identified problem, research question and the objectives the following hypotheses were formed:

**H1:** Job related stress has relationship with employees' performance

**H2:** Organizational related stress has a relationship with employees' performance

**H3:** Individual related stress has a relationship with employees' performance

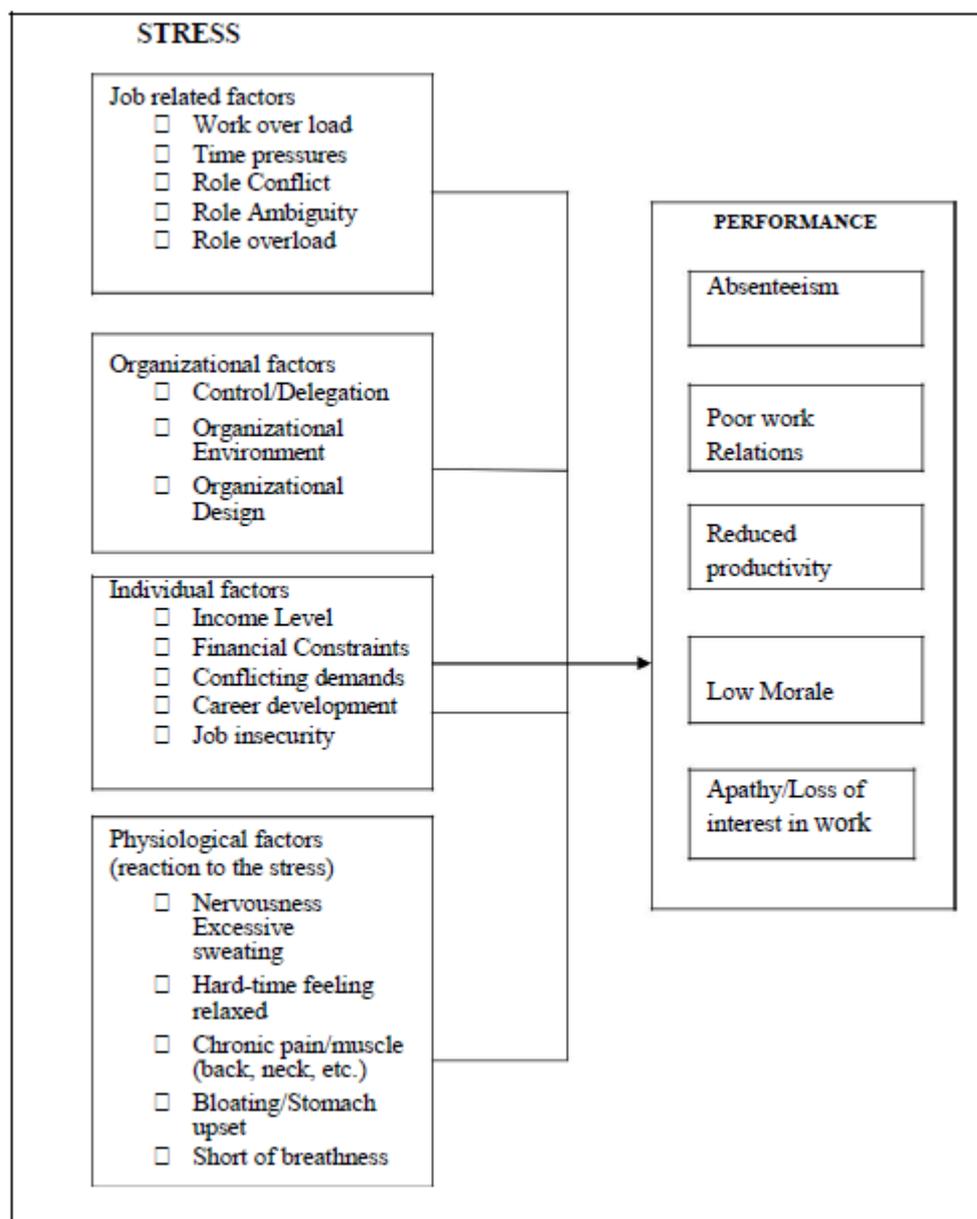
**H4:** Physiological reaction to stress has a relationship with employees' performance

#### IV. METHODOLOGY

##### 4.1 Conceptual Framework

Based on the past research by Seley (1993), Ferris, Bergin and Wayne (1988) and Karunanithy and Ponnampalam (2013) the independent variable stress, in this research is further subdivided into factors like job related, organizational related, individual related, and physiological stressors. The following frame work is formulated on the objectives to be achieved shows the linkages of the variables in this study.

Based on the framework, questionnaire was prepared and issued to the institute's 232 employees and the data of 200 staff were used for this study.



**Figure 1: Conceptual Framework**

## V. DATA COLLECTION

### 5.1 Sample size

The sample population is a subset of the entire population, and inferential statistics is to generalize from the sample to the population (Furlong et. al, 2000). A sample size of 232 was selected and the data from 200 respondents was used for the study. The sample size was determined using Yamane's (1967) simplified formula corrected to proportion to determine the sample size for the study.

$$n = \frac{N}{1+N(e)^2}$$

Where N: Total population ; n: Sample size; e: precision

$$n = \frac{550}{1+550(0.05)^2} = 232$$

### 5.2 Demography of sample

Response	Frequency	Percent
Male	140	70
Female	60	30
Total	200	100

### 5.3 Sample description

Age Group	Sample size
20-29	64
30-34	44
35-39	38
>40	54

### 5.4 Research instrument

The *research instrument used* for the survey is a structured undisguised questionnaire – a main source for the primary data collection. Secondary data was collected from various published books, web sites & records pertaining to the topic. The questionnaire was divided into sections – in the first section, background information/personal details of the respondent were collected. The Section-II of questionnaire was used to find out the stress levels of the employees and impact of the stress on performance and employee's physiological factors.

This part contains 50 questions related to five dimensions of stress such as job related factors, organizational factors, individual factors, physiological factors (reaction to stress) and performance. The respondents were asked to choose the most appropriate 'top-of-the-mind' response for each statement. To measure each variable, ten questions were given but all these questions were mixed systematically.

### 5.5 Reliability test of the questionnaire

The Likert-type scale with items 1-5 was used (where 1=Strongly disagree, 2= Disagree, 3=Neutral, 4=agree and 5=Strongly agree) in this study. The reliability statistic Cronbach's alpha coefficient value was calculated for internal consistency of the instrument, by determining how all items in the instrument related to the total instrument (Gay, Mills, & Airasian, 2006). This instrument was tested on a pilot group of 40 employees. They were asked to fill out the 55-questions, and requested to select the appropriate answer on 5- point Likert Scale. After analyzing their responses from the pilot study with SAS program, the Cronbach's alpha static was found to be .80 suggesting a strong internal consistency. Two months later, the same instrument was used with 232 employees to collect the responses. Five questions were dropped out from a set of 55 questions because of

unsatisfactory Cronbach's alpha coefficient values. The overall Cronbach's alpha for the questionnaire with a set of 50 questions was 0.88, and the increase was an effect of dropping the questions with low C-alpha values. The spread of the questions and stress factor was given Table 1.

**Table 1: Distribution of questionnaire with questions used to measure the degree of stress caused by the stress factor**

Questions Range	Stress factor
1-10	Job related factors
11-20	Organizational factors
21-30	Individual factors
31-40	Physiological factors (reactions to stress)
40-50	Performance

Employees were requested to mark on a 5 point Likert type rating scale. To obtain the rating – score, numbers marked were added up and mean value was obtained to categorize the level of stress. Based on the following table degree of each variable was measured. Based on the Table 2 degree of each variable was measured. Based on the study of Kamalakumati Karunanithy and Ambika Ponnampalam (2013) the degree of each variable was measured (Table2).

**Table 2: Rating of the score**

Total rating range of mean value	Level of influence of the variable on dependent variable
$1 \leq x_1 \leq 2.5$	Low level
$2.5 \leq x_1 \leq 3.5$	Medium Level
$3.5 \leq x_1 \leq 5.0$	High level

$x_1$ :: Mean of job related stress

$x_2$ :: Mean of organizational related stress

$x_3$ :: Mean of Individual related stress

$x_4$ :: Mean of Physiological related stress

The Statistical Analytical System (SAS) was used to measure the central tendency, measures of variability, and dispersion for the analysis. Correlation analysis is also applied in the study to observe if a change in the value of one variable is accompanied by the change in the value another variable and further, the regression analysis was done to describe the nature of the relationship between the variables.

### 5.6 Data Analysis

To test the reliability of each variable Cronbach's alpha coefficient was calculated and to measure the relationship between stress factors and performance, Karl Pearson's correlation coefficient was measured. To measure the cause and effect relationship between stress factors and performance regression analysis was used (SAS V9.3).

## VI. RESULTS AND DISCUSSION

To assess the level of job related, organizational related, individual related, physiological related (reaction to stress) stressors and its effect on performance, the primary data gathered through questionnaire was analyzed based on the 18 factors. The job related stress factors include work over load, time pressures, role conflict, role ambiguity and role overload; the organizational related stress factors are control/delegation, organizational environment and organizational design. Income level, financial constraints, conflicting demands, career development, and job security are the individual related stress factors. The physiological factors – reaction to stress are nervousness and excessive sweating, hard-time feeling relaxed chronic pain/muscle pain (back, neck. etc.), bloating/stomach upset and short of breathness are included for the measurement. The performance was measured by absenteeism, poor-work relations, reduced productivity, low morale and apathy/loss of interest in work. From the results of Table 3 it was observed that the objective to find out the source and level of stress is fulfilled and the results indicate was observed that the stress exists among the employees of the institute and effects performance at medium level. The mean value, standard deviation, standard error and percentages were calculated for the variables from the data collected from the respondents (n=200). The overall SE of 0.06 is relatively small, gives an indication that the mean is relatively close to the true mean of the overall population.

**Table 3: Mean values of stress**

1	Stress	Mean	SD	SE	Level of stress as per decision rule
1	Job related stress	3.24	0.98	0.05	Medium
2	Organizational related stress	2.81	0.85	0.06	Medium
3	Individual related stress	3.17	0.83	0.06	Medium
4	Physiological (reaction to stress)	3.02	0.95	0.04	Medium
	<b>Stress</b>	<b>3.06</b>	<b>0.85</b>	<b>0.06</b>	Medium

The overall mean value of stress and mean values for all the four dimensions indicates a medium level stress and these values and falls under the range  $2.5 \leq x_1 \leq 3.5$  effecting the employees performance at the institute. Job related stress is little higher than the other stress factors at the institute.

### 6.1 Level of stress among the employees

The results of the job related, organizational related, individual related and physiological elated stress and stressors are presented in Table 4. Mean values of all the four kinds of stress ranged from 2.81 to 3.24 and are below 3.5 is falling under the range of  $2.5 \leq x_1 \leq 3.5$  and nsidered as medium level stress as per the decision rule (as per Table). On the other hand the dependent variable performance, is registering an overall mean value as 2.09 which is falling into the range of low level. From the Table 4 that level of influence of each variable will also be observed.

Table 4: Level of stress and their stressors

	Variables	Mean	SD	SE
1	Work overload	3.30	1.07	0.11
2	Time pressures	3.35	0.91	0.09
3	Role conflict	3.38	0.98	0.1
4	Role Ambiguity	3.02	0.86	0.09
5	Role overload	3.15	0.85	0.86
	Job related stress	3.24	0.98	0.05
1	Control/delegation	3.1	0.94	0.11
2	Organizational environment	2.8	0.91	0.09
3	Organizational Design	2.53	0.92	0.10
	Organizational related stress	2.81	0.85	0.06
1	Income level	2.83	0.95	0.11
2	Financial constraints	2.53	0.95	0.10
3	Conflicting demands	3.4	0.98	0.1
4	Career development	3.1	0.91	0.05
5	Job security	4.02	0.89	0.09
	Individual related stress	3.17	0.83	0.06
1	Nervousness and excessive sweating	2.81	0.87	0.08
2	Hard-time feeling relaxed	3.24	0.95	0.1
3	Chronic pain/muscle pain (back, neck. etc.)	3.54	1.06	0.11
4	Bloating/stomach upset	2.83	0.9	0.09
5	Short of breath ness	2.70	1.11	0.10
	Physiological factors (reaction to stress)	3.02	0.95	0.04
1	Absenteeism	2.06	0.71	0.07
2	Poor-work relations	2.05	0.56	0.06
3	Reduced productivity	2.10	0.56	0.06
4	Low Morale	2.22	0.63	0.06
5	Apathy/Loss of interest in work	2.05	0.64	0.06
	<b>Performance</b>	<b>2.09</b>	<b>0.53</b>	<b>0.03</b>

From the Table 4 indicate the mean values of the four dimensions of stress – job related, organizational related, individual related and physiological related are at medium level and performance is at low level and to check their relationship a correlation analysis was carried out. The Table 5 provides the information on the relationships between the dimensions of stress and performance fulfills the objective to find out the relationship between the variables.

**Table 5: Correlation between variables**

Factor	job related factor	Organizational related	Individual related	Physiological related	Performance
Job related	1	0.42**	0.30**	0.34**	-0.22*
Organizational related		1	0.40**	0.17NS	-0.09NS
Individual related			1	0.28**	0.01NS
Physiological related				1	-0.13 NS
Performance					1
Overall stress					-0.13 NS

\*\*Correlation is significant at prob< 0.01; \* significant at prob<0.05NS: Not significant at prob>= 0.05

Source: Survey data

The r-value-0.22 job related stress negatively impacts on performance at medium level, the other stress factors has not correlated with performance. Even overall stress (measured through four stress factors) and performance are not correlated (r=-0.13). The job related factors are major concern for the performance in general, and job security in particular at the institute. The overall stress is able to explain the variance in performance by the B-value - 0.02 in Table 6 indicating that as overall stress decreases by one unit, performance increases by 0.02 units.

**Table 6: Coefficients**

Model	Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	Std Error	Beta		
Constant	10.047	1.62		6.46	0
Stress	-0.02	0.017	-0.13	-1.26	0.21

To ascertain the contribution by the variable to explain the variance in the dependent variable and to test the hypothesis a linear regression is worked out as follows:

**Table 7: Coefficients of the study variables**

**Coefficients<sup>a</sup>**

Model	Unstandardized		standardized	T	Sig.
	coefficients		coefficients		
	B	StdErr	Beta		
1 Constant	10.26	1.65		6.23	0.0001
Job related	-0.08	0.037	-0.25	-2.2	0.03
Organizational related	-0.02	0.08	-0.03	-0.26	0.79
Individual related	0.04	0.06	0.07	0.64	0.53
Physiological related	0.05	0.06	0.09	0.83	0.41
2 (Constant)	10.11	1.54		6.56	0.0001
Job related	-0.08	0.03	-0.26	-2.44	0.02
Individual related	0.03	0.05	0.06	0.59	0.56
Physiological related	0.05	0.06	0.09	0.84	0.4
3 (Constant)	10.59	1.3		8.13	0.0001
Job related	-0.08	0.03	-0.25	-2.38	0.02
Physiological related	0.06	0.06	0.1	0.99	0.33
4 (Constant)	11.05	1.22		9.08	0.0001
Job related	-0.07	0.03	-0.22	-2.17	0.03
<sup>a</sup> Dependent Variable: performance					

It was observed from the results of the Table 7 introduction of individual, organizational and physiological stress factors give unsatisfactory results. Therefore, those three stressors do not appear to be significant in determining the nature and level of performance of the employees. However, job related stress factors have a negative effect on performance when other three stressors omitted.

**Model summary**

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	0.244 <sup>a</sup>	0.06	0.02	1.64
2	0.244 <sup>b</sup>	0.06	0.03	1.63
3	0.223 <sup>c</sup>	0.05	0.04	1.62
4	0.223 <sup>d</sup>	0.05	0.04	1.62

<sup>a</sup>Predictors: (constant), job, organizational, individual and physiological

<sup>b</sup>Predictors: (Constant), Job, individual, Physiological <sup>c</sup>Predictors: (constant),

Job, Physiological <sup>d</sup>

Excluding the organizational related, physiological, and individual related stressors the multiple regression equation can be expressed as:

$$Y = a + \beta_1 X_1 + \epsilon$$

Where Y = Performance; X<sub>1</sub> Job related stress

$$Y = 11.05 + X_1(-.07) + \epsilon$$

### Testing of Hypothesis

Results obtained from the overall means values revealed that the hypotheses H1, H2, H3, H4 are accepted – that is the job related, organizational related, individual related and physiological related stressors have relationship with performance. However, the results obtained correlation analysis and regression analysis was not supportive of H2, H3 and H4 as organizational related, individual related and physiological factors have no significant impact on performance. These factors play a negligible role in determining performance, while the job related stressors have a negative and statistically significant effect on employee performance which is in supportive of the H1.

## VII. CONCLUSION

From this research study it was observed that over all stress which is mentioned through the said stressors has negative and medium level impact on the performance. The job security is main concern for the employees of the institute. Each variable value fall within the range of  $2.5 \leq x_1 \leq 3.5$  which shows medium level stress exist in the institute. The job security, workload, time pressures and physiological factors – chronic back pain and panic reaction to stress are the dominant cause of medium level stress. These issues need to be addressed by the management of the institute by Ergonomics to understand the interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance. We have also observed women will have more stress because of their dual roles working and taking the responsibility of the family at home – role conflict. Proper strategies need to be developed considering working on flexible hours, interpersonal relationship and supervision and participation of the employees in the stress management may be helpful to cope the stressors.

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