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INFLUENCE OF HOURS OF COMPUTER USAGE ON STRESS IN SOFTWARE PROFESSIONALS

M. S. Kusumadevi[1], Sushma S[2]

ABSTRACT: BACKGROUND: Stress in the workplace is becoming the most common complaint of the late 20th century employee. It is a costly, pervasive phenomenon in work organizations and many studies have been carried out in the west to investigate this area of human concern. India being the Information Technology (IT) hub with lakhs involved as IT Professionals, there is a need to assess prevalence of professional stress in this area. **OBJECTIVE**: To study the relationship between hours of exposure to computer and stress in IT professionals. **MATERIALS AND METHODS**: This is a cross-sectional study conducted using stress questionnaire like Form X of the STAI (Spielberger, Gorsuch, & Lushene, 1970). This study was conducted specifically on 21 male professionals aged 34.52±7.85 yrs., working in an IT firm with the designation of a software engineer. **STATISTICAL METHODS:** Descriptive and inferential statistical analysis has been carried out in the present study. **RESULTS**: 52.4% of the subjects who worked for less than 8 hrs. /day with computers had stress score of 40.82±8.99. 47.65% of the subjects who were exposed to computers for more than 8 hrs./day had stress score of 46.30±10.01.This study revealed positive correlation between between hours of computer use and stress levels in these subjects (P=0.008). **CONCLUSION**: We found positive associations between hours of computer use and stress levels in this cross-sectional study of IT professionals. Such high stress scores could hinder the progress of these IT professionals and could predispose them for the development of psychiatric disorders.
KEYWORDS: Stress, software professionals.

INTRODUCTION: Stress has touched almost all professions posing threat to mental and physical health. Work related stress in the employee, consequently affects the health of the entire organization.[1] National Institute for Occupational Safety and Health, part of U.S Department of Health and Human Services, states that "job stress, now more than ever, poses a greater threat to the health of workers and the health of the organizations".[2]

Interest in professional stress research is growing primarily because of the increasing incidence of the adverse effects of profession on psychological and physical health of employees. [3] IT company jobs are known to be more competitive and stressful because of their nature of work like target achievements, night shift, work overload.[1]

India being a forerunner in the IT industry with lakhs involved as IT professionals, there is an urgent need to understand the dynamics of the IT professional stress and its associated psychiatric morbidities so as to prevent it from assuming epidemic proportion. Moreover, since IT professionals are exposed to long hours of computer usage, the present study was conducted to determine the relationship between stress and the number of hours of computer exposure in IT professionals.

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MATERIALS AND METHODS: This is a cross-sectional study. This study was conducted specifically on 21 male professionals aged 34.52±7.85 yrs., working in an IT firm with the designation of a software engineer. Participants were explained the objectives of the study and only those who gave consent were given the option to take up the interview.

Subjects who reported to be on psychiatric treatment were excluded and none of the subjects reported any chronic disorders. None of the subjects reported history of smoking or alcohol use. The subject's name, company they work for, and the city of working were left optional to maintain anonymity and facilitate unbiased reporting. All the employees worked in day shift. A total of 21 completed interviews were obtained at the end of the study. They were given the following questionnaire in the morning hours between 9 AM to 11 AM.

The STAI-X (state trait anxiety inventory).

While the term "anxiety" is most often used to describe an emotional state characterized by subjective feelings of tension, apprehension, nervousness and worry, and by activation or arousal of the autonomic nervous system (Spielberger, 1972;Spielberger et al., 1983), it is also used to describe relatively stable individual differences in anxiety as a personality trait(Spielberger, 1972). The STAI was developed to measure these different constructs.

Form X of the STAI (Spielberger, Gorsuch, & Lushene, 1970) contains 20 state anxiety items and 20 trait anxiety items. The state anxiety items are each rated on a 4-point intensity scale, from 1 for "not at all" to 4 for "very much so." Respondents are asked to indicate how they generally feel. Scoring is reversed for anxiety-absent items (e.g., "I feel calm"). The range of scores for each of the two scales is 20–80.

RESULTS:

Computers hours/day	No. of subjects	%
<8.0 hours per day	11	52.4
>8.0 hours per day	10	47.6
Total	21	100.0
Table 1: Computers hours per day		

Computer hours	No. of subjects	STAI score
<8.0 hours per day	11	40.82±8.99
>8.0 hours per day	10	46.30±10.01
Total	**21**	**43.43±9.67**
Table 2: Mean score of STAI according to Computers hours per day		

I score is significantly more associated with more hours of computer use P=0.202

Pair	r value	P value
STAI score vs. Computer hours per day	0.563	0.008**
Table 3: Pearson correlation STAI score with Age and BMI		

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STATISTICAL METHODS: Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean±SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5% level of significance. The following assumption on data is made, Assumptions: 1. Dependent variables should be normally distributed, 2.Samples drawn from the population should be random, and cases of the samples should be independent.

Student t test (two tailed, independent) has been used to find the significance of study parameters on continuous scale between two groups (Inter group analysis) on metric parameters. Pearson Correlation between STAI score and Computer hours spent is performed.

DISCUSSION: We found positive associations between hours of computer use and stress levels in this cross-sectional study of IT professionals.

Job stress is a common workplace problem experienced by all professionals irrespective of their nature of work; however, this phenomenon is more common in situations that are deadline driven. Software house is one such sector, which is affected profoundly by this challenge, and professionals serving these organizations are often observed under huge stress.

Stress is defined as 'the pattern of emotional states and physiological reactions occurring in response to demand from within or outside an organization'. [4, 5] A stressor, on the other hand, is considered to be 'a condition or situation that elicits a negative response such as anger, frustration, anxiety or tension'. [6] Workplace stress is quite common and can be measured through different sources.

Pressure ultimately causes the stress that leads to different types of strain and finally hampers the performance of the employees. Stress, not just affects the efficiency of the employees, but also causes ailment and other physical or emotional problems as well. [5]

It has been pointed out that 'high performance (requirements) with high technology can exercise a dangerous influence on the human personality anyone who is constantly working or playing with computers is at risk'.[7] The constant use of computers affects the users in terms of fatigue, eye strain, arm and shoulder pain, and backache. Khosrowpour and Culpan (1989) published a stress-related study applied to individuals working in computer-related fields. They observed: 'Information processing professionals see change in technology as a prerequisite for their existence, yet the speed of this change can have profound psychological and physiological effects'.[8]

In their studies, Kleiner and Geil (1985), Natalie (1995), and Fujigaki (1993) argued that it is important to measure the stress among computer professionals and their articles summarize and report the presence of stress among these professionals.[9,10,11] Hoonakker (2005) argued about different factors associated with quality of working life and turnover. He pointed out that work and family life, if spill over to each other, create different psychological demands and cause stress and depression. [12]

Googins (1987) also reported the same phenomena.[13] Other causes and consequences of stress have been assessed by different studies like: physical ailments by Frone et al. (1997),[14] life satisfaction by Higgins et al. (1992),[15] turnover at workplaces by Greenhaus et al. (1997),[16] and job satisfaction by Netemeyer et al. (1996).[17] In their works, Fujigaki[11] and Furuyama [18] have tried to measure the causes of stress among programmers and the impact of the stress in creating different

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types of errors in their work. Significantly, they have mentioned that stress is present in almost all phases of software development life cycle.

In concurrence with the results of the above studies, our present study revealed similar results.

The following computer stress relief techniques will go some way to relieving the stress of IT professionals:

1. Good working conditions like comfortable chair, desk etc.
2. By taking regular breaks.
3. Updating the equipment.
4. By having a backup for all the information.
5. Regular exercise.

CONCLUSION: Stress is the concept given much importance in any organization because it creates high impact on the individual performance and the overall performance of the organization. Our study revealed positive associations between hours of computer use and stress levels in IT professionals. In the present day, gold collar employees are constantly best with problems of stress and strain in everyday life, because of high-pressure environment of working and living and they easily fall victims to disease and illness.

Therefore these employees need to be treated differently. HR strategies must be relaxed and should be designed with proper understanding of their expectations and unique preference that demonstrates proactive strategy. With proper stress combating techniques individuals as well as organizations can become happy and healthy.

Preventive strategies like training in stress management, frequent screening to identify professional stress and depression at the initial stages and addressing these issues adequately might help the IT professionals to cope with their profession better without affecting their lifestyle and health.

Limitation of the Study:

1. Larger sample size was required for better results.
2. Only male subjects were selected because according to literature review females are more stressed. Hence the objective of our study was to exclusively study the effect of hours of computer usage on stress in male software professionals.
3. Form X of the STAI contains 20 state anxiety items which evaluates stress on a temporary basis. Therefore chronic confounding factors such as marital status, socio-economic demographics were not considered for statistical analysis.

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AUTHORS:
1. M. S. Kusumadevi
2. Sushma S.

PARTICULARS OF CONTRIBUTORS:
1. Associate Professor, Department of Physiology, Bangalore Medical College and Research Institute, Bangalore.
2. Assistant Professor, Department of Physiology, Bangalore Medical College and Research Institute, Bangalore.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Sushma S,
Assistant Professor,
Department of Physiology,
Bangalore Medical College and
Research Institute,
Fort, Bangalore-560002.
Email: kusumadevi.viji@gmail.com