STRATEGIES TO MANAGE STRESS CAUSING HEALTH HAZARDS IN SOFTWARE INDUSTRIES

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ABSTRACT

In modern era software industry is a boon for job seekers. It is a fact that software industry perks are higher than the core industry. On the other hand lack of experience leads to fatal death of the employees. Young graduates completing seventeen years of formal education are not taught how to manage and tackle the problems. But recent changes in the industry have created lot of stress among the employees. Work pressure, Working time, Targets are the main factors contributing Stress. In long run stress leads to job frustration, deterioration in the quality of job, active learning and active co-operation. The aim of the study is to find out the strategies used by the employees to manage stress. The data was collected by a structured questionnaire by convenience sampling method from 300 employee’s having not less than five years of experience. The findings are discussed in detail in this paper by Pareto analysis. Marital status plays a vital role in shouldering job stress. Positive Thinking, Attitude to accept challenges and achieve, Time management, focusing on other aspects of life are helpful in reducing job stress. The authors have also given some suggestions to manage stress as “Prevention is better than Cure”.

Key Words: Stress, Frustration, Work pressure, Time, Positive Thinking, Attitude, Marital status

INTRODUCTION

United States National Institute of Occupational Safety and Health has defined workplace stress as "the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker. Job stress can lead to poor health and even injury." It simply means that workplace stress generally arises when there is a mismatch between the nature or magnitude of the job to be done and the employee desires and capabilities. Further, the definition also categorizes workplace stress into physical stress and psychological or emotional.

Employee Stress
- Increased irritation
- Depression
- Loss of interest in the job/ feeling of boredom in the job
• Frequent fights with the colleagues
• Withdrawal from social life
• Increased number of mistakes in any work done
• Frequent headaches
• Disturbed sleeping and eating patterns
• Aggravated health disorders such as - Asthma, ulcers, skin allergies and cardiac problems.

When these signs are noticed in an individual, the individual is most probably a victim of stress. In order to combat employee stress, it is very important to know the reasons behind employee stress. It is only when there is evidence of specific stressors that one can think of eliminating them.

**Physical Stressors**

It has been found that poor working conditions at the workplace have resulted in physical stress among employees. The physical stressors include - poor lighting, improper ventilation, high level of humidity, unsuitable temperatures at workplace etc. Extensive usage of computer leads to various muscle related ailments in employees, especially those in the IT industry.

**Psychological Stressors**

Physical stressors impact an individual even psychologically. For instance, long working hours without the required breaks would make a person tired and demotivated and a sense of helplessness creeps in. This would lead to frustration and eventually, psychological stress. Psychological stressors include - unfriendly work environment, monotonous job, problems in the social/external environment, job insecurity, problems with colleagues or immediate superiors, lack of proper balance between work and home, external factors in the industry, unsuitable work culture in the organization etc.

Computers have became an epitome of modern life, being used in every aspect of life from calculating grocery bills, telecommunications, banking operations, name any sphere and one will find computer. With use of Internet technology distances carry little meaning and information anywhere in the world is accessible just with a click of mouse.

Computer, a hallmark of technological advancement has ushered in a new genre of occupational health problem, i.e. of computer related health problems. India is one of the countries where the IT Industry is developing. A lot of job opportunities are available in this field and young generations are attracted by this field both for enjoyment and earnings. India being the forerunner in the cyber world the occupational health personnel is slowly awakening to this group of modern occupational diseases, which are slowly taking its roots among the information technology (IT) professionals. These problems if ignored can prove debilitating and can cause crippling injuries forcing one to change one's profession.

Stress can also lead to psychological problems such as depression, blood pressure, headache, sleeplessness, Loss of appetite and so on\textsuperscript{2-7}. A little knowledge about how-to manage the stress can avoid these hazards. The awareness can maximize both productivity and enjoyment. The basic model is given by
Quality planning to manage stress

- Identify the problems creating stress
- Determine the needs of the jobs.
- Translate the needs to positive thinking
- Minimize the work pressure by proper planning.
- Develop some relaxation techniques.

Aims and Objectives

The following are the aims of this study:
- To analyze variables causing stress and leads to health hazards.
- To find the proportion of people encountered stress in workplace.
- Cause and effects of stress
- Relationship between various factors.
- To find how they manage stress
- To suggest techniques to manage stress in order to prevent health hazards

MATERIAL AND METHODS

A study was carried out among 300 Information Technology (IT) professionals in Chennai having minimum of five years experience to study the computer related health problems and role stress in the field. The study subjects were administered a pre designed structured questionnaire covering details like age, working hours, working environment, experiencing of any problem while working on computers and the type and kind of problems perceived.
Fig. 2: Model: occupational stress indicator
The working environment of each individual was assessed separately with respect to position of monitor, distance of monitor from the user, use of anti glare screen, type of chair, use of foot rests, position of elbow and legs, position of body, number of breaks, and manner of holding the mouse. The visual discomfort due to display of terminal was also considered. The working hours per day, work volume nature of work, breaks were also collected.

The data to evaluate the stress was collected based on the following model. Each key area is addressed in the OSI, using a number of sub-scales. The explanation for each scale and sub-scale is given below.

The Questionnaire Uses 6 Sub-Scales, Which Are As Follows

1. Factors intrinsic to the job itself
2. Managerial role
3. Relationship with others
4. Career and Achievements
5. Organizational structure and climate
6. Work-home interface

Organizational Structure And Climate:

Employees work within an organization structure and contribute to it. In this sense, sources of organizational stress originate from structural design and process features of the organization, though climate will embrace individual perceptions of both. The sources of stress in this area may arise from the perception of the following.

a. Inadequate guidance and backup from superiors
b. Lack of consultation and communication
c. Inadequate or poor quality of training/management development
d. Covert discrimination and favouritism
e. Mundane administrative tasks or paperwork
f. Staff shortages and unsettling turnover rates
g. Inadequate feedback about the performance
h. Insufficient resources to work with
i. Sharing of work and responsibility evenly
j. Morale and organizational climate
k. Characteristics or the organization’s structure and design

Home-Work Interface

There is always a hazy overlap between work and home. Employees perceive that there exists a two-way relationship; with sources of stress at work affecting home-life and sources of stress at home affecting the work-life. The source of stress may arise from the perception of the following.

a. Absence of emotional support from others outside work
b. Demand that work makes on private or social life
c. Demands of the job that affects personal relationships (spouse, children)
d. Lack of practical support from others outside work
e. Absence of stability or dependability in home-life
f. Pursuing a career at the expense of home-life
g. Home-life with a partner, who is also pursuing a career
h. Spouse’s attitude towards one’s job and career
i. Not being able to “switch off” at home
j. Not having enough work to do

Coping Strategies
1. Social support:
2. Task strategies:
3. Logic:
4. Home and work relationships:
5. Time:
6. Involvement:

RESULTS AND DISCUSSION

In the present study the data was collected from 300 samples out of which male 59% and female 41%. The age of the subjects varied from 28 to 48 years with mean age of 32.58 years. The computer related morbidity was found in 92% of the study subject. The visual problem was seen in 64% and the musculoskeletal in 64.5% while 62% felt stressful symptoms.

The average working hours was 9 ± 0.35 hours respectively. The correlation between the number of people encountering visual discomfort and working stretch with monitor without breaks was very high (r=0.7) which coincides with the previous findings. Musculoskeletal problems were very high along the subjects who were not using proper ergonomic. The females reported more musculoskeletal problems (80%) when compared to male. A little knowledge and awareness among the IT professionals about ergonomic factors will reduce these problems.

The study has brought forth a very high prevalence of computer related morbidity in software professionals. There was not much visual discomfort due to display quality. This is a high time to create awareness among the people regarding the uprooting health hazards as the study reveals 92% are affected by health hazards. Stress and visual discomfort were the other problems encountered by the respondents. Stress can be avoided by giving proper counseling and yoga etc. Visual discomfort can be avoided by giving proper working environment.

There is an immediate need for the concerned agencies to collaborate and enforce suitable preventive measures like proper counseling and educating about ergonomic factors so on*. This can lead the field as an enjoyable field to work. Constant monitoring and periodic appraisal of health problems are also required.
Table 1: Magnitude of Computer related health problems

<table>
<thead>
<tr>
<th>S.no</th>
<th>Factor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Obesity</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>Gastric disorders</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Hypertension</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Osteoporosis</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>Loss of Appetite</td>
<td>18</td>
</tr>
<tr>
<td>6</td>
<td>Visual Discomfort</td>
<td>58</td>
</tr>
<tr>
<td>7</td>
<td>Musculoskeletal</td>
<td>80</td>
</tr>
<tr>
<td>8</td>
<td>Stress</td>
<td>39</td>
</tr>
</tbody>
</table>

![Magnitude of Computer related health problems](image)

**Fig. 3:** Magnitude of Computer related health problems

Table 2: Magnitude of Computer related problems by sex

<table>
<thead>
<tr>
<th>SEX</th>
<th>N</th>
<th>Stress</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE</td>
<td>177</td>
<td>78</td>
<td>44</td>
</tr>
<tr>
<td>FEMALE</td>
<td>123</td>
<td>48</td>
<td>39</td>
</tr>
<tr>
<td>TOTAL</td>
<td>300</td>
<td>126</td>
<td>42</td>
</tr>
</tbody>
</table>

Chi-square value df=1 Stress .7577 P > .05 statistically not significant
Table 3: Dominating reasons for occupational stress as perceived by IT employees.

<table>
<thead>
<tr>
<th></th>
<th>6Qa</th>
<th>6Qb</th>
<th>6Qc</th>
<th>6Qd</th>
<th>6Qe</th>
<th>6Qf</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>20.44444</td>
<td>17.45455</td>
<td>16.6</td>
<td>16.875</td>
<td>16.18182</td>
<td>17.90909</td>
</tr>
<tr>
<td>4</td>
<td>31.33333</td>
<td>32.18182</td>
<td>30.3</td>
<td>28.875</td>
<td>33.18182</td>
<td>29.54545</td>
</tr>
<tr>
<td>3</td>
<td>25.66667</td>
<td>27.63636</td>
<td>28.7</td>
<td>28.875</td>
<td>27.27273</td>
<td>26.81818</td>
</tr>
<tr>
<td>2</td>
<td>18.22222</td>
<td>12.36364</td>
<td>11.9</td>
<td>13.375</td>
<td>12.18182</td>
<td>13.09091</td>
</tr>
<tr>
<td>1</td>
<td>11.66667</td>
<td>10.27273</td>
<td>12.2</td>
<td>11.875</td>
<td>11.18182</td>
<td>12.09091</td>
</tr>
</tbody>
</table>

Fig. 4: Reasons for Occupational stress

Table 4: Coping strategies adopted by IT Employees

<table>
<thead>
<tr>
<th></th>
<th>7Qa</th>
<th>7Qb</th>
<th>7Qc</th>
<th>7Qd</th>
<th>7Qe</th>
<th>7Qf</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>26.75</td>
<td>23</td>
<td>26.33333</td>
<td>25.5</td>
<td>26.75</td>
<td>26.33333</td>
</tr>
<tr>
<td>4</td>
<td>33.5</td>
<td>31.85714</td>
<td>35.66667</td>
<td>30</td>
<td>31.5</td>
<td>33.33333</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
<td>28.14286</td>
<td>24.33333</td>
<td>27.5</td>
<td>26.75</td>
<td>26.16667</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>9.285714</td>
<td>8</td>
<td>10.75</td>
<td>9.25</td>
<td>8.666667</td>
</tr>
<tr>
<td>1</td>
<td>4.75</td>
<td>7.714286</td>
<td>5.666667</td>
<td>6</td>
<td>5.5</td>
<td>5.5</td>
</tr>
</tbody>
</table>
Fig. 5: Coping strategies adopted by IT Employees

Table 5: Percentage of factors causing stress by sex.

<table>
<thead>
<tr>
<th>Factors causing stress</th>
<th>Male (177)</th>
<th>Female (123)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Volume</td>
<td>26</td>
<td>18</td>
</tr>
<tr>
<td>Working hours</td>
<td>68</td>
<td>69</td>
</tr>
<tr>
<td>Insufficient breaks.</td>
<td>38</td>
<td>23</td>
</tr>
<tr>
<td>Food habits</td>
<td>45</td>
<td>52</td>
</tr>
<tr>
<td>Working time</td>
<td>65</td>
<td>72</td>
</tr>
<tr>
<td>Travel time</td>
<td>63</td>
<td>68</td>
</tr>
<tr>
<td>Nature of work</td>
<td>28</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 6: Multiple regression of work stress to overall performance

<table>
<thead>
<tr>
<th>Factor</th>
<th>R</th>
<th>R&lt;sup&gt;2&lt;/sup&gt;</th>
<th>β</th>
<th>ΔR&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational climate and staff development</td>
<td>0.216</td>
<td>0.047</td>
<td>-0.242</td>
<td>0.047***</td>
</tr>
<tr>
<td>Job responsibility and welfare</td>
<td>0.293</td>
<td>0.086</td>
<td>0.276</td>
<td>0.039***</td>
</tr>
<tr>
<td>Mental reaction</td>
<td>0.345</td>
<td>0.119</td>
<td>-0.212</td>
<td>0.033***</td>
</tr>
</tbody>
</table>

*** P < .001

619
Table 7: Techniques used to manage stress by employees

<table>
<thead>
<tr>
<th>S.no</th>
<th>Factor</th>
<th>Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes (48)</td>
</tr>
<tr>
<td>1</td>
<td>Seeks support and advise from senior</td>
<td>36</td>
</tr>
<tr>
<td>2</td>
<td>Plan ahead</td>
<td>28</td>
</tr>
<tr>
<td>3</td>
<td>Accept the situation and learn to live with it.</td>
<td>34</td>
</tr>
<tr>
<td>4</td>
<td>Have stable relationship</td>
<td>23</td>
</tr>
<tr>
<td>5</td>
<td>Talk to understanding friends</td>
<td>24</td>
</tr>
<tr>
<td>6</td>
<td>Try to avoid situation</td>
<td>38</td>
</tr>
<tr>
<td>7</td>
<td>Suppress my emotion and try not to let the stress shown</td>
<td>16</td>
</tr>
<tr>
<td>8</td>
<td>Not bottling up the things</td>
<td>24</td>
</tr>
<tr>
<td>9</td>
<td>Recognize the own limitations</td>
<td>32</td>
</tr>
</tbody>
</table>

(6Qa) It is observed that 31.33% of the respondents approached agree, 25.66% of the respondents approached are indifferent, 20.44% strongly agree, 18.22% disagree and 11.66% strongly disagree that the source of stress are the actors intrinsic to the job.

(6Qb) 32.18% of the respondents agree, 27.63% indifferent, 17.45% strongly agree, 12.36% disagree and 10.27% strongly disagree that the source of stress are the managerial role.

(6Qc) 30.3% of the respondents approached agree, 28.7% are indifferent, 16.6% strongly agree, 13.37% disagree and 11.87% strongly disagree that the relationship with other people is the reason for stress.

(6Qd) 28.87% of the people approached are indifferent and also agree, 16.87% strongly agree, 13.37% disagree and 11.87 strongly disagree career and achievement to be a reason for stress.

(6Qe) 33.18% of the respondents approached agree, 27.27% are indifferent, 16.18% strongly agree, 12.18% disagree and 11.18% strongly disagree that organizational structure and climate is the reason for stress.

(6Qf) 29.54% of the respondents approached agree, 26.81% are indifferent, 17.9% strongly agree, 13.09% disagree and 12.09% strongly disagree that the reason of stress is the home/work interface.

(7Qa) 33.5% of the respondents approached agree, 26.75% strongly agree, 24% are indifferent, 11% disagree, and 4.75% strongly disagree social support as their coping strategy.

(7Qb) 31.85% of the respondents approached agree, 28.14% indifferent, 23% strongly agree, 9% disagree and 7.71% strongly disagree task strategy as their coping strategy.
(7Qc) 35.66% agree, 26.33% strongly agree, 24.33% are indifferent, 8% disagree and 5.66% strongly disagree logic as their coping strategy.

(7Qd) 30% of the respondents approached agree, 27.5% are indifferent, 25.5% strongly agree, 10.75% disagree, 6% strongly disagree home/work relationship as their coping strategy.

(7Qe) 31.5% of the respondents approached agree, 26.75% are indifferent and also strongly agree, 9.25% disagree, 5.5% strongly disagree time as their coping strategy.

(7Qf) 33.33% agree, 26.33% strongly agree, 26.16% are indifferent, 8.66% disagree and 5.5% strongly disagree involvement as their coping strategy.

CONCLUSION
Organizational climate and culture plays a vital role in managing stress. A good environment can create a positive approach towards job thereby reducing stress.

The work stress was felt more in female employees from the organizational climate and staff development than their male counter parts. Those who were unmarried and in management position carried a greater work load than others.

The employees work stress levels seems to be moderate (M = 3.14). The highest work stress came from job responsibility (M = 3.62) followed by physical reaction (M = 3.42).

Suggestions
Stress is physical, mental, or emotional strain, suspense, anxiety, or excitement. Anxiety is a reaction to a real or imagined threat, a general feeling of uneasiness or dread. Stress is not a disease but a normal part of everyone’s life. It is not necessarily good or bad. However, reactions to stress can vary considerably and some of these reactions are undesirable.

The most frequent undesirable reaction is anxiety. Anxiety is often accompanied by twitching or trembling, muscle tension, headaches, sweating, irritability, fatigue, nightmares, memory problems, sexual impotence, sleeplessness, dry mouth or difficulty in swallowing. The degree of anxiety is much more a function of the individual than the degree of stress.

The risk of anxiety increases with stress, a family history of neurosis, fatigue or overwork, or the recurrence of situations that have been previously stressful or harmful. The common causes could be actual danger, physical and emotional stress, grief (death of a loved one), drugs including caffeine, withdrawal from drugs, poor diet, hyperventilation syndrome, hyperthyroidism etc.,

How To Manage Stress
Different people perceive different situations as stressful. Finding the cause of the anxiety is the first step in resolving a problem with stress. Stress management refers to the effort to control and reduce the tension that occurs with a situation that is considered difficult or unmanageable. Stress management involves the effort of a person in making emotional and physical changes.
The degree of stress and the desire to make the changes will determine the level of change that will take place. The attitude of an individual can influence whether a situation or emotion is stressful or not. A person with a negative attitude will often perceive many situations as being stressful.

Negative attitude is prediction of stress, because this type of person responds with more stress than a person with a more positive attitude. If the nutritional status of the person is poor, the body is stressed and the person is not able to respond to a stressful situation.

As a result, the person can be more susceptible to infections. A poor nutritional state can be related to unhealthy food choices, inadequate food intake, or an erratic eating schedule. Physical activity has many physiological benefits.

A consistent programme of physical activity can contribute to a decrease in depression, if it exists. It also improves the feeling of well-being. When a person has no hobbies or means of relaxation, he may be unable to handle stressful situations because the individual has no outlet for stress.

**Programme For Stress Management**

- Mental Level
- Positive Thinking
- Refocus The Negative To Be Positive
- Talk Positively To Yourself
- Plan Some Fun
- Make An Effort To Stop Negative Thoughts.
- Physical Level
- Diet Level
- Social Support
- Relaxation

**Managing Stress**

- Rule 1: Develop A Positive Attitude
- Rule 2: Put Your Mind At Work
- Rule 3: Start Living A Healthy Life
- Rule 4: Know How To Relax
- Rule 5: Spend Time With Nature

**Time Management**

Time Management can be defined as being effective (carrying out right tasks at right times) rather than being efficient (doing tasks well). Time Management is about making every moment effective by being truly focused and not dividing our energies by worrying about the past or future. However, it is still important to be able to keep the past, present, future in perspective so that we can plan and priorities effectively. In this way we are able to set tasks in the right context. This gives a sense of order, structure, and security for those who are dependent upon time management skills.

**Time Management Vs. Stress**

Stress is often a result of feeling out of control either at work or at home or both. It is well recognized that managing time effectively is one of the major factors in reducing stress. But, poor time management can cause to feel stress.

The following poor time management situations may cause us to feel stress.

1. Too much work and not enough time in which to complete it.
2. Delays, whether avoidable or not, which leave us feeling angry and frustrated.
3. Rushing around trying to do everything at twice our normal rate of speed.
4. Finding it difficult or impossible to relax on holidays.
5. Becoming impatient with others when they are not quick enough at grasping things.

In fact older generation, from common man to king had time for recreation and lived a stress controlled life. But new generation have no time for relaxation. Due to many changes in the society and living pattern, people don’t find time for each other and strained relationships are common nowadays.

Time Wasters
We have many time wasting habits in our day to day life. Timewasters differs from person to person. However, the common areas of Time Wasters are:

1. Lack of ability to be disciplined in work
2. Lack of ability to say ‘NO’
3. Lack of ability to be disciplined on the telephone
4. Lack of ability to control and manage
5. Lack of ability to communicate well
6. Lack of ability to be disciplined at meetings
7. Lack of ability to review systems and procedures.
8. Preference to social things than to do a job
9. The prospect of Conflict with others
10. Unfamiliarity with the task / work
11. Fear of making mistakes

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