

# The Work-related stress and Awareness of ergonomics principle among Call center workers

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## Abstract

**Background and purpose:** Work related stress is the response people may have when presented with work demands and pressures that are not mastered to their knowledge and abilities which challenge their ability to cope. Work related stress can be caused by poor work organization (the way they design jobs and work system, and the way we manage them), by poor work design.

**Aim:** The aim of the study is to know the stress level among the call center workers and how ergonomic principles help relieve them.

**Method:** 80 subjects of age group of 20-40 years were picked from a random call center and their stress level was calculated with the help of work place stress scale. Ergonomic exercises were advised and a six-week training were enabled to them. The outcome measure was evaluated by calculating the change in the stress level after the ergonomic program.

**Result:** Result of this study was analyzed in terms of reduced score of Work place stress scale. Paired Sample 't' test was used to analyze the pre and post differences for stress level of work place stress scale. The level of significance was set at  $p < 0.05$  for all tests. This showed extremely significant improvement in stress scoring after giving ergonomic interventions

**Conclusion:** The study concludes that a work place exercise that is ergonomics are useful in reducing the stress of workers in call centers. The study showed significant improvement in the quality of stress from severe to mild or calm state.

**Keywords:** Customer service representative, telephone sales representative, work design, job satisfaction, ergonomics.

## 1. INTRODUCTION

The development of computer and information technology is perhaps one of the most dominating factors in the ever-changing working life of today. The 2000's saw a rapid computerization of Indian working life and the number of computer workers is continuously increasing. 37 per cent of the female working population and 35 per cent of the male work force use computers, at least half of their working time (The Indian Work Environment Authority, 2003). Computer technology has affected the work environment and

the users in different ways, resulting for example in more constrained sedentary work. Technological developments in general have had a great impact on working life. <sup>(1,2)</sup>

Call centers may be defined as ‘physical or virtual operations in which a managed group of people spend most of their time doing business by telephone, usually working in a computer-automated environment’ (Merchant 1998). People directly involved in these operations are named in many ways, for example as telephone agents, telephone operators, telephone communicators, telephone sales representatives (TSRs), customer service representatives (CSRs), customer consultants, champions, assistants and, simply, representatives <sup>(3)</sup>

They are usually called ‘agents’, that is to say ‘people working within a call center whose main job is to handle incoming and/or outgoing telephone calls’. Only some of the generic components of operations in call centers, and of agents’ Working at a call center isn’t easy. In fact, over half of call center employees feel burnt out on daily basis. <sup>(3)</sup> Call center agents who are very stressed out struggle to provide great customer service. And when they leave out of burnout, it gets expensive. The average cost to replace an employee is six to nine months of their salary.

Work design is a wide topic which involved a lot of controversy and popularity due to the fact that work design affect the workers every day in the work place. Work design allows employees to see how their work methods, layout and handling procedures link together as well as the interaction between people and machines. Job designs is a process of structuring work and designating the specific work activities of individuals or group of individuals to achieve certain organizational objectives.<sup>(4)</sup>

In the work design, there are stressors that have a negative impact on the performance of employees. The stressors are the following: long hours, work overload, time pressure, and lack of variety in the job. Also others stressors are: job insecurity, low pay, poor career prospects, empowerment, lack of participation in decision-making and non-work-related events. Work design, also known as job design, is a relatively new science that deals with designing the task, workstation, and working environment to fit the human operator better. <sup>(5)</sup>

The importance of job design also comes from its potential for motivating workers. There are four types of work design which are: the motivational approach, the biological approach, and the mechanistic approach. The biological approach is based on ergonomics and focuses in minimizing physical strain on the workers. It does so by reducing strength and endurance requirements and making improvements to upsetting noise and climate conditions. <sup>(5)</sup>

The basic aim of this research is to introduce the workers with the basic ergonomic principles and workstation exercises that will relieve their stress and improve their quality of life.

## 2. METHODOLOGY

**Study design:** Randomized Control Trial.

**Study type:** Experimental Study

**Duration:** 6 months.

**Sample size:** 50 patients

**Sampling method:** Convenient sampling.

**Place of study:** Call center

### 3. CRITERIA FOR STUDY

#### Inclusion Criteria

- Age group- 18-40 year
- Both Genders
- Patients with Workplace stress score  $\geq 26-30$

#### Exclusion Criteria

- Patients with any neurological problem.
- Age  $>55$  or  $<18$
- Patients who are unwilling to participate

### 4. PROCEDURE

A total number of 50 subjects were selected for the study who are adequately intelligent enough to understand the instructions of the study experiment. The data were collected under natural environmental conditions between 9am to 2pm Study was approved by local ethics committee. The study was conducted in Vodafone call center where the employees were informed about how sitting throughout the day in the same environment can cause stress in their lifestyle, based on this, they were given a consent form and a form based on stress calculation i.e. WORK PLACE STRESS SCALE to check their stress level. After that they were employed in the ergonomic program for 6 weeks where the employees were taught with the work place exercises and relaxation exercises.

The ergonomic exercises given were:

#### Wrist, hand, and Arm Ergonomic Exercises

##### Wrist Tilt Exercise

The wrist tilt is perfect to gain feeling and momentum back into the wrist joint, especially after long bouts of typing on the keyboard:

1. Begin with arm fully extended and palm facing downwards
2. Gently tilt wrist to the right
3. Hold for three to five seconds
4. Move wrist to the left and hold for another three to five seconds
5. Begin with arm fully extended and palm facing downwards
6. Gently tilt wrist to the right
7. Hold for three to five seconds
8. Move wrist to the left and hold for another three to five seconds

##### Wrist Flexion Exercise

For people who have a shorter range of natural motion in their wrists, the wrist flexion exercise can help to increase flexibility and rejuvenate joints.

1. Hold arm outward with palm facing down
2. Catch the fingers of the extended hand with your opposite hand
3. Gently pull your fingers upwards until you feel a stretch on the underside of your wrist
4. Hold for 5 seconds, then release

5. Gently pull your fingers downwards until you feel a stretch on the front of your wrist
6. Hold for 5 seconds, then repeat on the other hand

### **Neck, Chest, and Shoulder Ergonomic Exercises**

1. Begin by sitting at the edge of your chair with your feet placed firmly on the ground
2. Extend your arms out to either side of your torso
3. Drop your head slowly to the right, trying to touch your right ear to your right shoulder
4. Hold the stretch for 5 seconds
5. Return to the starting position, then repeat on the other side
6. Drop your head down so that your chin touches your chest
7. Gently rock your head to the left and roll to the right; this should take about 5 seconds, return to the starting position.

### **Low Back Stretch, Seated Back Curl**

A simple exercise to perform right in your chair, the seated back curl is a great office way to release stiffness and tension in both your legs and upper back.

1. Begin seated at the front of your chair with your feet planted firmly on the ground
2. Slowly lift one leg up and grasp your shin with both hands
3. Bend forward and reach your nose to your knee
4. Make sure to bend through your upper back!
5. Relax back to the starting position
6. Repeat on the other side

### **Hip Stretch**

More than any other joint, the hips become alarmingly tight when you're sitting all day at the cubicle. The hip stretch helps to break up built-up tension in the hips.

1. Begin by sitting on the edge of your chair with your feet firmly on the ground
2. Lift one leg and cross it over the other right above the knee
3. Grasp your bottom knee with your hand on the opposite side
4. Gently apply pressure to the bottom leg while looking over your shoulder
5. Feel the stretch along your lower back and hip and hold for 10 seconds
6. Lower your legs back to the starting position
7. Repeat on the other side

After this 6-week ergonomics program, the employees were again given with the Work place stress scale form to check the present stress level. Both the pre and the post stress level were then compared to check for the study result<sup>(14)</sup>

### **The Workplace Stress Scale**

To get your score, add the numbers you answered to all of the eight questions and see how you compare.

## **8. OUTCOME MEASURES**

### **Work place stress scale**

It is a measure of subjectively experienced stress at work. It consist of 9 items with that have five points

likert-type response format. High scores are indicative of higher levels of job stress.

Interpretation- Score 15 or below- relatively calm , Score 16-20- fairly low, Score 21-25- moderate levels of work stress Score 26-30- severe levels of work stress, Score 31-40- potentially dangerous level of work stress.

### 9. STATISTICAL ANALYSIS

Data analysis was done using the Statistical Package for Social Sciences (SPSS version 21). Basic descriptions were presented in the form of mean, median and Standard deviation. Pre and post stress scores were compared using Wilcoxon ranks signed test. The level of significance was set at  $p < 0.05$  for all tests.

### 10. RESULT

Result of this study was analyzed in terms of reduced score of Work place stress scale. Paired Sample ‘t’ test was used to analyze the pre and post differences for stress level of work place stress scale. The level of significance was set at  $p < 0.05$  for all tests. This showed extremely significant improvement in stress scoring after giving ergonomic interventions.

*Directions: Thinking about your current job, how often does each of the following statements describe how you feel?*

|  | Never | Rarely | Sometimes | Often | Very Often |
|--|-------|--------|-----------|-------|------------|
| A. Conditions at work are unpleasant or sometimes even unsafe.                                     | 1     | 2      | 3         | 4     | 5          |
| B. I feel that my job is negatively affecting my physical or emotional well being.                 | 1     | 2      | 3         | 4     | 5          |
| C. I have too much work to do and/or too many unreasonable deadlines.                              | 1     | 2      | 3         | 4     | 5          |
| D. I find it difficult to express my opinions or feelings about my job conditions to my superiors. | 1     | 2      | 3         | 4     | 5          |
| E. I feel that job pressures interfere with my family or personal life.                            | 1     | 2      | 3         | 4     | 5          |
| F. I have adequate control or input over my work duties.   | 5     | 4      | 3         | 2     | 1          |
| G. I receive appropriate recognition or rewards for good performance.                              | 5     | 4      | 3         | 2     | 1          |
| H. I am able to utilize my skills and talents to the fullest extent at work.                       | 5     | 4      | 3         | 2     | 1          |

**Table1: Descriptive Statistics**

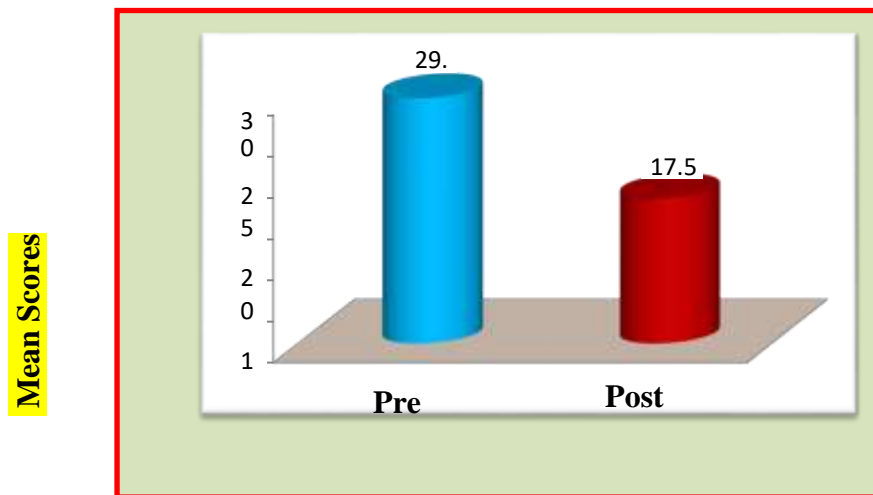
| Groups              | Minimum | Maximum | Mean  | Std. Deviation |
|---------------------|---------|---------|-------|----------------|
| <b>Stress Scale</b> |         |         |       |                |
| Pre                 | 20.00   | 38.00   | 29.70 | 4.36           |
| Post                | 15.00   | 21.00   | 17.58 | 2.06           |

**Table 2: Pre and Post comparison of Stress scale**

| Site                | Mean ± SD    | Median | Mean Difference | t Value | P value  |
|---------------------|--------------|--------|-----------------|---------|----------|
| <b>Stress scale</b> |              |        |                 |         |          |
| Pre                 | 29.70 ± 4.36 | 30.50  |                 |         |          |
| Post                | 17.58 ± 2.06 | 17.50  | 12.12           | 17.711  | < 0.001* |

**Paired Sample ‘t’ Test:** \*P < 0.05 (significant), \*\*p > 0.05 (Not significant)

**Graph 1: Stress scale**



## 11. DISCUSSION

The above study was conducted to check the effect of ergonomics exercises on the stress level of the call center workers. Call centers may be defined as ‘physical or virtual operations in which a managed group of people spend most of their time doing business by telephone, usually working in a computer-automated environment.

Ergonomics can roughly be defined as the study of people in their working environment; it’s a process of designing or arranging work workplaces, products and systems so that they fit the people who use them. In the above study 50 subjects were randomly selected from the call centers with age between 18 to 40 and their stress level was calculated using Work place stress scale. Ergonomic advices and work station exercises were implemented on them.

The exercises include wrist and hand exercises, back stretch, hip stretch, neck stretches, etc. A 6 weeks program was run and post exercise stress score was recorded using work place stress scale. While doing the entire study some complications emerged which were tackled accordingly. Lynn Holdsworth Susan Cartwright, (2003), "Empowerment, stress and satisfaction: an exploratory study of a call center", Leadership & Organization Development Journal, Vol. 24 Iss 3 pp. 131 – 140 in this study the independent ‘t’ test was used to identify any differences between Respondents and the population means. The data



were then analyzed to examine differences between the CSA's using the independent t test, conclude that the call center agents were more stressed, less satisfied and reported poorer mental health and physical health than the general working population. In addition the sample perceived themselves as less empowered than other workers in a traditional office environment.

Leon Straker a, Rebecca A. Abbott b,c,\* , Marina Heiden b, Svend Erik Mathiassen b, Allan Toomingas b,d Sitestand desks in call centres: Associations of use and ergonomics awareness with sedentary behavior Applied Ergonomics 44 (2013) 517e522 in this study the results were as 90 (68.7%) operators worked at a sitestand desk. Working at a sitestand desk, as opposed to a sit desk, was associated with less time seated (78.5 vs 83.8%, p

¼ 0.010), and less time taken to accumulate 5 min of standing/walking (36.2 vs 46.3 min, p ¼ 0.022), but no significant difference to sitting episode length or the number of switches between sitting and standing/walking per hour. Ergonomics awareness was not associated with any sedentary pattern variable among those using a sitestand desk. And concluded that Use of sitestand desks was associated with better sedentary behavior in call centre workers, however ergonomics awareness did not enhance the effect. In our study result was analyzed in terms of reduced score of Work place stress scale. Paired Sample 't' test was used to analyze the pre and post differences for stress level of work place stress scale. The level of significance was set at  $p < 0.05$  for all tests, which came out to be  $<0.001^*$ . This showed extremely significant improvement in stress scoring after giving ergonomic interventions. Thus we concluded that a work place exercise that is ergonomics are useful in reducing the stress of workers in call centers. The study showed significant improvement in the quality of stress from severe to mild or calm state and hence prove the alternate hypothesis.

## 12. CONCLUSION

The study concludes that a work place exercise that is ergonomics are useful in reducing the stress of workers in call centers. The study showed significant improvement in the quality of stress from severe to mild or calm state. There was noticeable difference in stress rate. The pre and post results showed marked reduction in stress rate. Also, we could conclude that not only call center workers but also other professionals, can practice work place exercises that is ergonomics to lower their stress and make the office environment healthy.

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