



## STRESS LEVELS IN EMPLOYEES WORKING NIGHT SHIFTS OF A CALL CENTER IN INDIA-A CROSS SECTIONAL STUDY

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### ABSTRACT

**Background:** In the past twenty years there is a rapid increase in the business process outsourcing (BPOs) in India. Those of the employees who work for the international call centers work in different time zones, which results in erratic working hours. These young employees need to take turns and change the working shifts on regular basis, which cause stress and their sleep wake cycle is disturbed. Most of these employees work night shifts, and have irregular shift timings which results in high stress levels. **Objectives:** To assess the stress levels in call center employees **Methods:** The present study is a cross sectional study. Perceived stress among the employees was assessed using the perceived stress scale (PSS-14). **Results:** In the present study the female employees were more stressed and had higher score of the PSS-14, the male employees were comparatively less stressed. Young study participants were more stressed than the older counterparts and those participants who were married were more stressed. Those employees on night shifts and longer working hours were significantly more stressed than those working day shift and for shorter hours

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## INTRODUCTION

In the past twenty years there is a rapid increase in the business process outsourcing (BPOs) in India. This is due to the rapid development of communication and technology along with other factors such as lesser labor costs and availability of quality English speaking population in India.<sup>1</sup> The Information Technology industry has grown by leaps and bounds in metropolitan cities along with many two tier cities. Young Indian population is usually employed in these settings, factors such as higher pay, challenging and interesting environment to work in and the attractive lifestyle are few factors which have contributed to younger population choosing this career.<sup>2</sup> The Services which provide inbound or outbound services which may include reservation centers, help desks, information lines and customer service centers is called as a "call center"<sup>3</sup>, both domestic and international customers are catered to. Those of the employees who work for the international call centers work in different time zones, which results in erratic working hours.

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These young employees need to take turns and change the working shifts on regular basis, which cause stress and their sleep wake cycle is disturbed.<sup>1,2</sup> Most of these employees work night shifts, and have irregular shift timings which results in high stress levels due to the circadian rhythm sleep disorders. The employees may unable to cope up with the stress due to the lack of adequate sleep.<sup>4</sup> Serious health disorders may result from the night shift duties, few studies have also found that stress and disorders of sleep were seen in 83% of call center employees.<sup>5</sup> The data available in terms of stress and health status of call center employees is limited.<sup>1-5</sup> The present study was designed to assess the stress levels in call center employees

## MATERIALS AND METHODS

**Study Design:** The present study is a cross sectional study

**Objective:** Was to assess the stress levels in call center employees

**Study Area:** The study was conducted in one of a Multinational company located in Pune, India.

**Study Tools:** Data was collected using a pretested, self-administered structured questionnaire consisting of socio-demographic details, lifestyle and work conditions of call handlers. Perceived stress among the employees was assessed using the perceived stress scale (PSS-14) developed by Cohen *et al*<sup>6</sup>. The mean scores were used to compare the scores between the groups, greater scores indicated higher perceived stress. PSS is a global scale and identifies the factors influencing or influenced by stress appraisal. It is a 14 -item scale which measures the degree to which situations in last one month were considered as stressful by a person scoring is done using Likert scale and It has seven negative and seven positive questions which is graded as 'never' 'almost never' 'sometimes' 'fairly often' 'very often' relating to their feeling of being stressed on a 0-4 scale. The 7 positive items were reverse scored and added up to the 7 negative items to get the total score.

**Sample Size:** The sample size was calculated using the software OPEN EPI 2.3.1, taking the prevalence of stress and sleep problems as 60% as per the study by Naveen, et al<sup>7</sup> and using the formula,  $n = [DEFF * Np(1-p)] / [(d^2 / Z^2) - 1/2 * (N-1) + p * (1-p)]$ , with 10% confidence limits and confidence level of 97% the sample size was calculated to 114, then rounded off to 120 participants.

## RESULTS

Table No 1 Showing distribution of study participants according to Age, Gender, Marital Status, Education Status, Shift Timings, Working Hours, Habits of the study participants.

**Unpaired t test WAS USED AND P VALUE <0.05 WAS CONSIDERED SATISTICALLY SIGNIFICANT:** The mean age of employees in the study was 25.35 years.

Majority of the employees were males 78.4% were males; most of them were unmarried 87.5%, 11.5% married, and rest of the 1 % were divorced. Most of the employees were graduates i.e. 84.2% and 7% were post-graduates; rest of the employees had diplomas. In the present study, majority of the employees worked in night shift or changing shift 83% the remaining 17 % worked in day shift. 82% of the participants worked for 7-9 hours per day, rest of the 18.0% worked for 9-14 hours per day. About 48% of the employees were cigarette smokers. 91.4% of these were males and 8.6% were females. Most of the 56% of the employees who smoked cited the reason for smoking as stress and 11% smoked to stay up at night. About 47% of the employees consumed alcohol. Table no 1

42.7% of the study participants complained of some kind of physical ailment. Amongst the 42.7%, Headache was reported by 61.5% and backache was reported by 47.7%, these two complaints were most commonly reported. 11% reported Eye problems, 2% had complaint of ear problems, gastritis was reported by 2.3% of individuals. In the present study the when the scores of the genders were compared, the mean score of the PSS 14 in female participants was higher than the males with scores of  $13.9 \pm 6.45$  and  $14.25 \pm 4.25$  respectively, although this difference was not statistically significant. In the present study the when the scores of the younger and older age groups were compared, the mean score of the PSS 14 in younger participants was higher than the older with scores of  $13.87 \pm 5.72$  and  $11.56 \pm 7.47$  respectively, although this difference was not statistically significant. In the present study the when the scores of the married and unmarried groups were compared, the mean score of the PSS 14 in married participants was higher than the unmarried participants with scores of  $12.45 \pm 6.32$  and  $12.78 \pm 5.68$  respectively, although

VARIABLES			
AGE GROUP	18-25 YEARS	26-34 YEARS	
	72%	28%	
GENDER	MALE	FEMALE	
	78.4%	21.6%	
MARITAL STATUS	UNMARRIED	MARRIED	DIVORCEE /SEPARATED
	87.5%	11.5%	1%
EDUCATION STATUS	GRADUATES	POST GRADUATES	DIPLOMAS
	84.2%	7%	8.8%
SHIFT TIMINGS	NIGHT SHIFT	DAY SHIFT	
	83%	17%	
WORKING HOURS	7-9 HOURS PER DAY	9-14 HOURS PER DAY	
	82%	18%	
CIGARETTE SMOKING	YES	NO	
	48%	52%	
ALCOHOL INTAKE	YES	NO	
	47%	53%	

**Table 2. Showing the mean score of study participant groups of PSS-14 components**

Sl no		Mean and Std dev of PSS-14	Mean and Std dev of PSS-14	t statistics	P value
1	GENDER	MALES	FEMALE	0.320	0.749
		$13.9 \pm 6.45$	$14.25 \pm 4.25$		
2	AGE GROUP	18-25 YEARS	26-34 YEARS	1.751	0.081
		$13.87 \pm 5.72$	$11.56 \pm 7.47$		
3	MARITAL STATUS	UNMARRIED/DIVORCED	MARRIED	0.274	0.784
		$12.45 \pm 6.32$	$12.78 \pm 5.68$		
4	SHIFT TIMINGS	NIGHT SHIFT	DAY SHIFT	1.914	0.021*
		$14.72 \pm 7.25$	$12.48 \pm 5.24$		
4	WORKING HOURS	7-9 HRS /DAY	9-14 HRS /DAY	2.121	0.036*
		$12.14 \pm 5.12$	$14.34 \pm 5.24$		

this difference was not statistically significant. In the present study the when the scores of the night shift and day shift were compared, the mean score of the PSS 14 in night shift participants was higher than the day shift workers with scores of  $14.72 \pm 7.25$  and  $12.48 \pm 5.24$  respectively, this difference was statistically significant with t value of 1.914 and p value of 0.021. In the present study the when the scores of the longer working hours and shorter working hours were compared, the mean score of the PSS 14 in longer working hours participants was higher than the shorter working hours workers with scores of  $14.34 \pm 5.24$  and  $12.14 \pm 5.12$  respectively, this difference was statistically significant with t value of 2.121 and p value of 0.036, table no 2

## DISCUSSION

In the present study the female employees were more stressed and had higher score of the PSS-14, the male employees were comparatively less stressed. Young study participants were more stressed than the older counterparts and those participants who were married were more stressed. Those employees on night shifts and longer working hours were significantly more stressed than those working day shift and for shorter hours. Suri Set al reported that the subjects reported poor support from their immediate supervisor and large number of the participants also reported musculo skeletal symptoms. In their study it was found that among the male and female employees, the stress scores of women employees differed significantly ( $t=5.26, p<0.01$ ).<sup>8</sup> A case-control study in New Delhi found that BPO employees were more stressed (58.3% vs. 19.3%); more depressed (62.9% vs. 4.6%); and more anxious (33.9% vs. 1.4%) as compared with non-BPO workers.<sup>9</sup> Another study done by Vaid et al<sup>1</sup> in Delhi found a very high level of stress (66%) among the call center employees. In another study by Latha<sup>10</sup> higher levels of stress of more than 65% have also been reported by researchers from call centers in other metropolitan cities. Bhuyar et al<sup>11</sup> reported that Anxiety levels in call centers were also found to be higher (45%) among them. A study in Mumbai by Chavan SR et al<sup>12</sup> found that 70.4% females and 55.6% males reported having headache almost every day. Disruption in family life and lack of socialization due to odd shift timings were reported more among women employees as they had to balance between the dual burden of work and home.<sup>13</sup>

## CONCLUSION

The mental health aspect and the stress levels in the call center employees need more attention and focused as most of the employees are and belong to the productive age group. Large scale multicentric studies should be conducted to better understand the epidemiology of the problem.

## LIMITATIONS

Present study was a cross-sectional study, the determination of the causative factors of the stress could not be determined. Sample size was only 120, a multicenter study with a larger study population would give better estimates.

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