



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

INTERNATIONAL JOURNAL  
OF CURRENT RESEARCH

International Journal of Current Research  
Vol. 13, Issue, 05, pp.17387-17389, May, 2021

DOI: <https://doi.org/10.24941/ijcr.41444.05.2021>

RESEARCH ARTICLE

OPEN ACCESS

## A CROSS SECTIONAL STUDY ON SLEEP QUALITY OF A CALL CENTER EMPLOYEES WORKING NIGHT SHIFTS IN INDIA.

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### ARTICLE INFO

#### Article History:

Received 09<sup>th</sup> February, 2021  
Received in revised form  
14<sup>th</sup> March, 2021  
Accepted 20<sup>th</sup> April, 2021  
Published online 20<sup>th</sup> May, 2021

#### Key Words:

Insomnia,  
Athens Insomnia Scale,  
Sleep Quality.

### ABSTRACT

**Background:** There have been substantial increases in newer business models like business process outsourcing (BPOs) in last two decades in India. Various factors have contributed to the conducive environment in India for these businesses to boom which include, cheaper labor costs and the pool of skilled, English speaking Indians have been the foremost factors. The employees working at night may be unable to sleep adequately during daytime, which can compromise their health status. Few studies indicate that the night shift duties result in serious health concerns for call center employees, it was observed that sleep disorders were present among 83% of employees. **Objectives:** To assess the sleep quality using Athens insomnia scale. **Methods:** The present study is a cross sectional study. **Results:** 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. Only about 21.6% call employees did not have any type of sleep problems; 63.5% had suspected insomnia and 14.9% had insomnia according to the Athens insomnia scale. **Conclusion** The call center employees need to be screened for Regular health check-ups, the employees need to have access to consultation of counsellors and need to be educated about the sleep hygiene and healthy lifestyle. Large scale multicentric studies should be conducted to better understand the epidemiology of the problem

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Citation: Dr. Niyati Patra and Dr. Jayaraj R Mhetri. "A cross sectional study on sleep quality of a call center employees working night shifts in india.", 2021. International Journal of Current Research, 13, (05), 17387-17389.

## INTRODUCTION

There have been substantial increases in newer business models like business process outsourcing (BPOs) in last two decades in India. Various factors have contributed to the conducive environment in India for these businesses to boom which include, cheaper labor costs and the pool of skilled, English speaking Indians have been the foremost factors.<sup>1</sup> Many metropolitan and few tier two cities have become an important centers of Information Technology industry.

The modern Indian population have adopted more luxurious lifestyles because of the high-income, a high spending capacity. Call centers are employing young Indians as they offer higher salaries, modern and interesting work environment and an attractive lifestyle.<sup>2</sup> Any 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>. The call centers cater to both domestic and international population, but the employees working in international call centers need to work in different time zones, which makes their working hours erratic. Also the change in working shifts on regular basis disturbs the sleep wake cycle further.<sup>1,2</sup> Most of these employees work night shifts, and have irregular shift timings which results in circadian rhythm sleep disorders (CSRD).<sup>4</sup> The employees working at night may be unable to sleep adequately during daytime, which can compromise their health status.<sup>4</sup>

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Few studies indicate that the night shift duties result in serious health concerns for call center employees, it was observed that sleep disorders were present among 83% of employees.<sup>5</sup> there are multiple studies on Indian call centers in the are aspertaining to sociology, management, and psychology, but very limited data is available in terms of health of employees .<sup>1-5</sup> The present study was designed to assess the sleep quality using a validated tool.

## MATERIALS AND METHODS

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

**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. Athens Insomnia Scale was used to assess the Sleep quality of respondents.<sup>6</sup> The first five items comprised difficulties initiating sleep, maintaining sleep, early morning awakening, sleep duration, and perceived sleep quality. The last three items measured aspects of daytime impairment (well-being, physical and mental functioning, and sleepiness). Each item was scored on a 4-point LIKERT SCALE with higher scores indicating more severe problems. The total score ranged from 0 to 24. The scores were then graded as follows: score zero to 4 "no sleep problem," score 4 or 5 "some suspicion of insomnia," and score  $\geq 6$  "suspected insomnia." The Athens Insomnia Scale has shown good reliability and validity.

**Sample Size:** The sample size was calculated using the software OPEN EPI 2.3.1, taking the prevalence of sleep disorders as 60% as per the study by Naveen, et al <sup>7</sup> and using the formula,  $n = [DEFF * Np(1-p)] / [(d2/Z21 - /2 * (N-1) + p * (1-p)]$ , 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 and Athens Insomnia Scale, of the study participants.

**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. 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. Athens Insomnia Scale.<sup>9</sup> was used to quantify the sleep quality. Only about 21.6% call employees did not have any type of sleep problems; 63.5% had suspected insomnia and 14.9% had insomnia according to the Athens insomnia scale. Further enquiry into their duration of sleep showed that majority of the employees i.e. 80.3% slept for 6-9 hours per day, whereas 2.7% slept longer i.e. 9-12 hours. However, 17% slept less than 6 hours per day. (Table 1) In the present study out of all the 18-25-year-old study participant, 77.6% of the had some sort of sleep problems and 74.2% who belonged to 26-35 years had sleep problems, although this difference in the age group was not statistically significant.

Variables			
Age group	18-25years 72%	26-34 years 28%	
Gender	Male 78.4%	Female 21.6%	
Marital status	Unmarried 87.5%	Married 11.5%	Divorcee /separated 1%
Education status	Graduates 84.2%	Post graduates 7%	Diplomas 8.8%
Shift timings	Night shift 83%	Day shift 17%	
Working hours	7-9 hours per day 82%	9-14 hours per day 18%	
Cigarette smoking	Yes 48%	No 52%	
Alcohol intake	Yes 47%	No 53%	
Athens insomnia score	No sleep problems Ais score <4 21.6%	Suspected insomnia ais score 4-5 63.5%	Insomnia present Ais score >6 14.9%

**Table no 2. Showing the relation between age group, smoking, intake of alcohol and shift duration with presence or absence of sleep**

Age group	Sleep problem absent	Sleep problem present	Chi square	P value
18-25 years	22.4%	77.6%	0.287	0.574
26-35 years	25.8%	74.2%		
Smoking present	Sleep problem absent 24%	Sleep problem present 76%	0.117	0.23
Smoking absent	17.2%	82.8%		
Alcohol intake present	Sleep problem absent 25.6%	Sleep problem present 74.4%	0.263	0.527
Alcohol intake absent	21.8%	78.2%		
Shift duration 7-9 hours	Sleep problem absent 27.6%	Sleep problem present 72.4%	0.904	0.341
Shift duration >9 hours	21.8%	78.2%		

76% of the participants who smoked had sleep problems and 82.8% of the nonsmokers also had sleep problems, this differences were not statistically significant. Similarly, 74.4% of participants who consumed alcohol and 78.2% of the participants who didn't take alcohol had sleep problems. 72.4% and 78.2% of the participants working in 7-9 hours and more than 9 hours duration and this differences were also not statistically significant. (Table 2)

## DISCUSSION

In the present study, only about 21.6% call employees did not have any type of sleep problems; 63.5% had suspected insomnia and 14.9% had insomnia according to the Athens insomnia scale. Further enquiry into their duration of sleep showed that majority of the employees i.e. 80.3% slept for 6–9 hours per day, whereas 2.7% slept longer i.e. 9–12 hours. However, 17% slept less than 6 hours per day. In a study by Raja J D 59.5% of call handlers were found to have some degree of insomnia<sup>8</sup>. Multiple studies have found similar findings of sleep disorders among call center employees<sup>4,5,7</sup>. Few studies have found the sleep disorders the employees were on a higher side, Associated Chambers of Commerce and Industry of India 18 and a study by Naveen, et al,<sup>7</sup> found that 60% of call center employees had insomnia. Impaired sleep quality may have been due to fatigue and occupational burnout.<sup>6</sup> Also constant change in working hours and shift changes with work pressure could be the reasons. National Sleep Foundation states that change in the sleep pattern and changes in working schedule can impact levels of concentration, performance of the job, general health condition and also social and family relations.<sup>9</sup> The nature of the work and working environment of call centers are challenging and lead to the high stress levels. The employees have to keep up the performance and reach the targets, which makes the job more demanding and stressful.<sup>5</sup> multiple studies indicate that increased workload may lead to burnout and sleep-related disorders.<sup>10</sup> Several Studies show that employees of high job demand report exhaustion, nervousness, and insomnia or disturbed sleep.<sup>11,12</sup>. Many individuals develop poor eating habits, smoke cigarettes or consume alcohol to cope up with the stress<sup>13</sup>. In the present study, 48% of the employees were cigarette smokers. And 47% of the employees consumed alcohol. In another multi centric study by Raja JD reported 44.3% of call handlers had addiction in the form of cigarette smoking and 48% had the habit of taking alcohol.<sup>8</sup>. In a study by Jha, et al, which was done in Kolkata, 63% of the employees had multiple addictions. 45% of the employees smoked, alcohol consumption was reported by 48% of the employees.<sup>14</sup> Honda, et al concluded that rest and break are a must during work hours.<sup>15</sup> few studies showed that reduced screen time can lead to prevention of sleep disorders<sup>16</sup>. Relaxation and yoga at work places lead to decreased stress levels.<sup>17</sup>

## CONCLUSION

The call center employees need to be screened for Regular health check-ups, the employees need to have access to consultation of counsellors and need to be educated about the sleep hygiene and healthy lifestyle. Large scale multicentric studies should be conducted to better understand the epidemiology of the problem.

**LIMITATIONS:** Present study being a cross-sectional study, causal effect could not be determined. Sample size was only 120, a larger, multicenter study would give better estimates.

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