IJOEM
International Journal of Occupational and Environmental Medicine

Original Article

Sleep Quality of Call Handlers Employed in International Call Centers in National Capital Region of Delhi, India

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Abstract

Background: Call center sector in India is a relatively new and fast growing industry driving employment and growth in modern India today. Most international call centers in National Capital Region (NCR) of Delhi operate at odd work hours corresponding to a time suitable for their international customers. The sleep quality of call handlers employed in these call centers is in jeopardy owing to their altered sleep schedule.

Objective: To assess the sleep quality and determine its independent predictors among call handlers employed in international call centers in NCR of Delhi.

Methods: A cross-sectional questionnaire-based study was conducted on 375 call handlers aged 18–39 years employed in international call centers in NCR of Delhi. Sleep quality was assessed using Athens Insomnia scale along with a pre-tested, structured questionnaire.

Results: The mean age of respondents was 24.6 (SD 2.4) years. 78% of participants were male. 83.5% of respondents were unmarried. 44.3% of call handlers were cigarette smokers. Physical ailments were reported by 37% call handlers. 77.6% of call handlers had some suspicion of insomnia or suspected insomnia; the rest had no sleep problem. Smoking, poor social support, heavy workload, lack of relaxation facility at office, and prolonged travel time to office were independent predictors of sleep quality ($p<0.05$).

Conclusion: Call handlers have to compromise upon their sleep owing to the contemporary work settings in call centers. Safeguarding their health becomes an occupational health challenge to public health specialists.

Keywords: Telephone; Telecommunications; Sleep disorders; Social support

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Introduction

The millennium has witnessed the onset of a revolution in terms of emergence of new industries like business process outsourcing (BPOs). The cheap labor costs and the pool of skilled, English speaking Indians have been the foremost factors contributing to the call center boom in the country.[1]

The National Capital Region (NCR), like other metropolitan cities, has become an important hub of IT industry. The changing lifestyles, demand for luxury and emergence of high-income spending groups coupled with a thoroughly cosmo-

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Received: Feb 23, 2016
Accepted: May 18, 2016
Online first: Sep 11, 2016

Cite this article as: Raja JD, Bhasin SK. Sleep quality of call handlers employed in international call centers in national capital region of Delhi, India. *Int J Occup Environ Med* 2016;**7**:207-214.

For more information on work-related musculoskeletal disorders in call center operators in Nigeria see http://www.theijoem.com/ijoem/index.php/ijoem/article/view/622

politan outlook of life are changing the modern Indian. Call centers are a major turn-on among young graduates as they offer lucrative salaries, interesting work environment and an attractive lifestyle.[2]

A "call center" is an umbrella term referring to reservation centers, help desks, information lines and customer service centers.[3] There are basically two types of call centers—domestic and international call centers. Prominence arises in international call centers, which operate at night corresponding to a time suitable for their international customers, mostly from USA and UK. Such erratic work timings are often called "graveyard shift" or "UK-USA shift" by few researchers.[1,2,4]

Most call handlers work at times when they would normally be sleeping and are forced to live as Indians by days and Westerners after sunset with changed identities and locations to suit their customers. This in turn could challenge the individual's circadian rhythm because the sleep-wake internal clock setting is at odds with sleep-wake cycle of the shift schedule, ultimately resulting in circadian rhythm sleep disorders (CSRD).[4] Also, majority of call handlers in night duties are unable to sleep adequately during daytime and hence may develop cumulative sleep debt leading to significant sleep deprivation that can further complicate their health.[4] Occupational health experts of Bangalore reported that night shift duties result in serious health concerns for call center employees; sleep disorders were observed among 83% of employees.[5]

The available literature revealed ample studies on Indian call centers in the domains of sociology, management, and psychology with very few in public health domain mostly using small sample sizes.[1-8] The present study was designed to assess the sleep quality and determine its independent predictors among call handlers employed in international call centers in NCR of Delhi using a validated tool on a fairly good sample size.

TAKE-HOME MESSAGE

- Call handlers have to compromise upon their sleep owing to the contemporary work settings in international call centers.
- Suspected insomnia was found among 59.5% call handlers in the present study.
- Smoking, poor social support, heavy workload, lack of relaxation facilities at office, and prolonged travel time to office were the independent predictors of sleep quality among call handlers.
- Safeguarding the health of call handlers becomes an occupational health challenge to public health specialists.

Materials and Methods

In a cross-sectional study conducted from November 2011 to April 2013, 375 call handlers aged between 18 and 39 years, employed in international call centers in Delhi, Gurgaon, and Noida were studied. Permission for carrying out the study was obtained from the Institute Ethics Committee. A "call handler" was defined as a person working in an international call center involved in customer service whose job required him/her to spend a significant proportion of his/her working time responding to calls on the telephone whilst simultaneously using display screen equipment.[8]

Sampling was done in two stages. First, three lists of international call centers (in Delhi, Gurgaon, and Noida) were prepared (sampling frame of call centers). Five call centers were selected randomly from each list using a random number table. In the second stage, list of call handlers in each call center was obtained and numbered (sampling frame of call handlers). In each call center, 25 call handlers (sampling unit) were selected for the study using a

systematic random sampling. Call handlers who had been employed for more than two months were only included in the study. Personal interviews were conducted at respective call centers using a structured questionnaire in English, after obtaining informed consent.

Data were collected using a pretested, self-administered structured questionnaire consisting of socio-demographic details, lifestyle and work conditions of call handlers. Sleep quality of respondents was assessed by a validated 8-item Athens Insomnia Scale.[9] This scale has been constructed in accord with the ICD-10 criteria for insomnia. 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 scale with higher scores indicating more severe problems. The total score ranged from 0 to 24. The scores were then graded as follows: score <4 "no sleep problem," score 4 or 5 "some suspicion of insomnia," and score ≥6 "suspected insomnia." The Athens Insomnia Scale has shown good reliability and validity.[10,11]

Oslo-3 scale was used to describe the level of social support among call handlers.[12] This scale incorporates three components covering different fields of social support giving a total score ranging from 3–14. A score of 3–8 was graded as "poor support," 9–11 "moderate support," and 12–14 "strong support."

Statistical Analysis

Data were analyzed with SPSS® for Windows® ver 16.0 (SPSS Inc, Chicago, USA). Univariate analysis was done to find the association of sleep quality with various factors using χ^2 test. Variables with $p<0.25$ were included in the final logistic regression model (backward likelihood ratio) to find the independent predictors of sleep quality. The criterion for entering and removing the independent variables from the backward stepwise model was $p<0.05$.

Results

The mean age of call handlers studied was 24.6 (SD 2.4, range 18 to 34) years. Majority (n=293, 78.1%) were males; 313 (83.5%) of respondents were unmarried, 56 (14.9%) married, and the remaining 6 (1.6%) were in live-in relationship or divorced. Three-hundred and seven (81.9%) call handlers were graduates and 30 (8.0%) were post-graduates; none had educational level less than senior secondary degree. The highest paid salaries were INR 40 000 (US$ 595) per month; the lowest was INR 7000 (US$ 104) per month, with a majority (n=363, 96.7%) earning more than INR 10 000 (US$ 149) per month. Most of them worked in either night shift (n=193, 51.5%) or changing shift (n=106, 28.3%); the remaining 20.2% were in day shift. Two-hundred and seventy (72.0%) participants worked for 7–9 hrs/day; the remaining 105 (28.0%) for 9–14 hrs/day—mean of 9.2 (SD 0.7) hrs/day. A majority of 276 (73.6%) attended 100 or less calls/day while the remaining 99 (26.4%) attended >100 calls/day.

One-hundred and sixty-six (44.3%) call handlers were cigarette smokers. Of these, 147 (88.6%) were male, 19 (11.4%) were female. Stress (52.4%) was the common reason given for smoking followed by fun/thrill (45.2%), for remaining awake at night (15.7%), and peer pressure/habituation (12.1%) as reported by call handlers who smoked cigarettes. One-hundred and eighty (48.0%) respondents also had habit of taking alcohol, of whom 160 (88.9%) were male.

Physical ailments were reported by 137 (36.5%) call handlers. Headache (n=87,

Table 1: Characteristics of the studied participants (n=375)

Variables		Sleep problem n (%)		OR (95% CI)
		Absent	Present	
Age group	18–25 yrs	56 (21.6)	203 (78.4)	1.15 (0.69 to 1.94)
	26–34 yrs	28 (24.1)	88 (75.9)	
Sex	Female	20 (24.4)	62 (75.6)	1.15 (0.65 to 2.05)
	Male	64 (21.8)	229 (78.2)	
Marital status	Never married	71 (22.5)	244 (77.5)	1.05 (0.54 to 2.05)
	Married	13 (21.7)	47 (78.3)	
Smoking*	No	54 (25.8)	155 (74.2)	1.58 (0.96 to 2.61)
	Yes	30 (18.1)	136 (81.9)	
Alcohol use	No	43 (22.1)	152 (77.9)	0.96 (0.59 to 1.56)
	Yes	41 (22.8)	139 (77.2)	
Availability of relaxation facility at office*	Yes	47 (28.1)	120 (71.9)	1.81 (1.11 to 2.96)
	No	37 (17.8)	171 (82.2)	
Shift duration*	7–9 hrs/day	67 (24.8)	203 (75.2)	1.71 (0.95 to 3.08)
	>9 hrs/day	17 (16.2)	88 (83.8)	
Distance travelled to office*	≤30 km	67 (21.3)	248 (78.7)	0.68 (0.37 to 1.27)
	>30 km	17 (28.3)	43 (71.7)	
Time spent in travel to reach office*	<1 hr	34 (28.6)	85 (71.4)	0.61 (0.37 to 1.01)
	≥1 hr	50 (19.5)	206 (80.5)	
Number of calls attended/day	≤100	59 (21.4)	217 (78.6)	0.81 (0.47 to 1.38)
	>100	25 (25.3)	74 (74.7)	
Workload*	OK	62 (26.5)	172 (73.5)	1.95 (1.14 to 3.35)
	Heavy	22 (15.6)	119 (84.4)	
Physical ailments*	No	62 (26.1)	176 (73.9)	1.84 (1.07 to 3.16)
	Yes	22 (16.1)	115 (83.9)	
Social support*	Moderate to strong	67 (26.6)	185 (73.4)	2.26 (1.26 to 4.05)
	Poor	17 (13.8)	106 (86.2)	

*Variables with p<0.25 that were included in multiple logistic regression model.

63.5%) and backache (n=60, 43.7%) were the commonly reported ailments. Eye problems (n=14, 10.2%), ear problems (n=5, 3.6%), upper respiratory tract infections (n=5, 3.6%), and gastritis (n=2, 1.5%) were also reported.

Sleep quality was assessed using Athens Insomnia Scale.[9] Only 84 (22.4%) call handlers had no sleep problem; 223 (59.5%) had suspected insomnia and 68 (18.1%) had some suspicion of insomnia. When enquired about their duration of sleep per day, 301 (80.3%) call handlers slept for 6–9 hours per day, and 13 (3.5%) slept even longer (9–12 hours). However, 61 (16.2%) slept <6 hours per day—mean of 6.5 (SD 1.2, range 3 to 12) hours per day.

In the present study, based on Oslo-3 scale, 204 (54.4%) respondents had moderate support, 48 (12.8%) had strong support and 123 (32.8%) had poor social support.

For the purpose of univariate analysis, sleep quality was dichotomized into two groups. The group with "no sleep problem" was renamed to "sleep problem absent," and categories "some suspicion of insomnia" and "suspected insomnia" were merged and renamed to "sleep problem present." Independent variables with $p<0.25$ were selected for inclusion into the final logistic regression model (Table 1). The final independent predictors of sleep quality are shown in Table 2.

Table 2: Independent predictors of sleep quality among call handlers derived from logistic regression analysis

Independent Predictors		Adjusted OR (95% CI)
Social support	Moderate to strong	1
	Poor	2.33 (1.28 to 4.24)
Smoking	No	1
	Yes	1.85 (1.09 to 3.13)
Workload	OK	1
	Heavy	1.75 (1.02 to 3.05)
Time spent in travel to reach office	<1 hr	1
	≥1 hr	1.79 (1.05 to 3.03)
Availability of relaxation facilities	Yes	1
	No	1.96 (1.17 to 3.27)

Discussion

International call centers are one of the most sought after workplaces among young graduates as they allow entry even with minimum education at quite attractive pay packages. Ambitious youngsters, as early as 15 years of age, are attracted to the seemingly lucrative call center job as they offer an interesting work environment, an attractive lifestyle and decent emoluments.[7,13-15] This is evident in our study wherein majority of call handlers (95.5%) were in the age group 18–29 years. The proportion of female call handlers was less as compared to males. Majority (83.5%) were unmarried. Most (90%) of call handlers were graduates and post-graduates. Similar findings have been reported by other studies as well.[7,13,15,16]

While employment in the BPO sector has meant that young adults are reaching their career milestones and financial goals much earlier, surveys and anecdotal evidence show that call handlers experience sleep disorders owing to odd working hours and a highly pressurized, monotonous work environment. In the present study, a significantly large proportion (59.5%) of call handlers were found to have suspected insomnia as measured with Athens Insomnia scale. Several studies have reported such high levels of sleep disorders among call center workers.[4,6,7,17,18] A study conducted by the Associated Chambers of Commerce and Industry of India[18] and another by Naveen, *et al*,[7] reported sleep disorders among 60% of call center workers. These studies, however, have primarily relied on self-reported sleep disorders rather

than some validated tool to measure their sleep quality.

Such high level of impaired sleep quality may be a sign of fatigue and occupational burnout.[6] Working in an extreme form of shift work often associated with long stretch of night duties could be one of the several reasons. The physiological, emotional and biological needs of a person are based on rhythmic pattern of sleeping and awakening. While hormones and chemicals are produced when a person is awake, they are at their lowest when the body rests at night. Any changes in the working schedule would affect this balance and lead to sleep deprivation, thereby disturbing the rhythm of the body and negatively affecting concentration, job performance, social and family interaction and general health (National Sleep Foundation).[18]

Call center workers have to listen, watch and talk, all at the same time without a break. The odd timing and nature of work by sitting in a chair for 9–12 hours a day, reading pre-scripted conversations on phone endlessly and often to irate customers from across the globe, makes the job more demanding and stressful.[5] Brown more vividly characterizes the work as "repetitive brain strain."[19] Cut throat competition and demand within the call center industry in attracting international customers in turn, may have resulted in overburdening of these call handlers by increasing their workload. According to several scholars increased workload can result in burnout and sleep-related disorders.[20] Studies show that workers with high job demand report exhaustion, nervousness, and insomnia or disturbed sleep.[21,22]

Few employees in order to cope with heavy workload and to stay awake through the night, developed poor eating habits in the form of junk foods, smoking, and alcohol intake, as they thought it to be a quick-fix solution.[23] In our study, 44.3% of call handlers had addiction in the form of cigarette smoking and 48% had the habit of taking alcohol. Smoking was found to be a significant (p=0.023) predictor of sleep quality. A study by Jha, *et al*, on 161 call center employees in Kolkata reported that 63% of the employees had multiple addictions. Smoking was reported by 45%, tobacco chewing by 57%, and alcohol consumption was reported by 48% of the employees.[24]

Honda, *et al*, found that having breaks in between work involving computers is a protective factor against mental health disorders including sleep disturbances. Therefore, they concluded that rest and break are a must during work hours.[25] Another researcher stressed that to prevent sleep disorders, it is necessary to limit the time spent on computers.[26] Therefore, making provisions for relaxation facilities at these international call centers is a must so as to help these call handlers cope with their demanding work environment. According to a researcher some call centers do offer yoga classes and other fun sessions to help their employees cope with workload.[27] However, still majority of call centers continue to ignore the existence of such facilities for their employees. In Bangalore call centers, 49% of employees had access to proper work-leisure facilities like gym, music, video games, *etc*. In Kolkata, about 56% of employees reported lack of any types of work-leisure facilities while the rest enjoyed music or played indoor games.[28] Even in our study, 208 (55.5%) call handlers did not have any access to relaxation facilities in their offices (Table 1).

Most international call centers in NCR of Delhi are situated in the outskirts of the city and also few are poorly connected. Commuting daily through the ever-busy roads of Delhi, wading through the hustle-bustle traffic to distant places can affect both the physical and mental health of call handlers. According to a survey of BPO employees, among various factors con-

sidered to cause mental and sleep-related disorders, travel time was one such major factor.[1,25]

Social support was measured with Oslo-3 scale and was found to be a significant predictor of sleep quality in our study. Social support involves interpersonal transactions such as showing emotional concern, and providing instrumental aid, information, and appraisal. A great deal of literature has suggested that social support system reduces burnout amongst call handlers.[16,29] Plasier, *et al*, reported that high social support protected workers from sleep-related disorders and buffered the unfavorable mental effect of working conditions.[30] It has been speculated that work-related stress is most effectively dealt with by work-related sources of support *viz* supervisors and co-workers and also by support obtained from family, friends, and neighbors outside the work environment. Therefore, we expected marital status to be a significant predictor of sleep quality among call handlers. However, no statistical association was found between them.

Our study did have certain limitations. It was a cross-sectional study, and only longitudinal studies can demonstrate if a causal effect does actually exist between various factors like physical ailment with sleep quality. Ours was a quantitative descriptive enquiry to document sleep quality among call handlers. By using qualitative aspects like focus group discussions and in-depth interviews, some more aspects of sleep disorders may have been brought to the fore. Only about a quarter (22%) of call handlers in our study was female. The investigator did not anticipate this at the beginning of the study; otherwise some changes could have been implemented in the methodology to get a reasonably fair representation of female call handlers.

Some suspicion of insomnia, and suspected insomnia was found among 18.1%, and 59.5% of call handlers, respectively. We felt that these would be subjects who might need counselling or medication in the immediate future. There is a dire need for establishing facilities like yoga, meditation, games, health clubs, sleeping bay, counselling and rehabilitation facilities, *etc*, at the call centers. In the meantime, part-time counsellors in liaison with a mental health facility can be appointed to help these call handlers. Regular health check-ups can be conducted for the early detection and treatment of psychological disorders and other lifestyle diseases among call handlers by engaging physicians, psychologists, psychiatrists, and public health experts. Health education activities need to be conducted regularly among call handlers to stress on the importance of having a sound sleep and healthy lifestyle. There is also a need for conducting larger epidemiological studies for better understanding of health problems and create a database of such problems among call handlers.

Call handlers have to compromise upon their sleep owing to the contemporary work settings in call centers. Therefore, safeguarding their health becomes an occupational health challenge to public health specialists.

Conflicts of Interest: None declared.

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