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Occupational Health and Safety issues and Audiometric Screening of Telecom Industry workers (with Particular Focus on Call Center)

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Abstract

The right to life is fundamental human right but diseases and accidents at work remain one of the most appalling tragedies. The phenomenon of occupational health and safety gain importance when the rapid industrialization resulted in a number of fatalities in the workplace throughout the world. The workers involved in call center are exposed to various health hazards during their job activity. The study aims the assessment of health impact of employees working in call centers, health settings at their workplace and audiometric screening to evaluate hearing performance by using an audiometer. The results were presented in form of graphs and tables. Results of audiometric screening have been plotted in the form of audiograms. The study has been carried out for the period of four months in three different call centers of Lahore. A questionnaire has been particularly outlined for the compilation of information from the recognized groups of call center operators facing several health related issues at their workplace. Total 150 individuals including control group were interviewed through the questionnaire. The collected data has been analyzed using Microsoft excel and descriptive statistics using SPSS software.

Keywords: Occupational Health Problems, Call Center Workers, Working Conditions, Hearing Impairment, Audiometric Screening, Call Centers.

Introduction

Perhaps, the rapid expansion of computer and information technology is one of the most influential factors in today's developing world. In 1990s, there was a rapid computerization in Swedish working life and the figure is constantly increasing[1]. Call centers have progressively become an imperative part of modern trade, which employees millions of agents globally and serves as a prime customer-facing channel for corporations in various different industries. These contact centers have remained a productive locale for operational management researchers in numerous fields. Additionally, since telecommunications and information technology have advanced over the past a number of years, the operational challenges faced by call canter managers have become more complexed[2]. Some workers experience back, neck, leg or arm pain or discomfort. There are some methods that can be adopted by the industries for safer and healthier working condition and to increase the productivity, more job satisfaction and stronger bottom-line results[3]. Employees in call centers perform multi-tasking. They are responding telephone calls while working on the computer screens simultaneously which might get interrupted frequently. Moreover, the job activity is monotonous and the processing of information continues. Whereas, effective communication skills and proficiency are expected. Additionally call center employees have to work under pressure and in a noisy environment. Whereas there is an online checkup on their performance[4].

Health is a condition in which there is complete physical, mental and social well-being and not only the absence of ailment or ill-health[5]. Work is a major contributor in people's lives as majority of the workers spend no less than 8 hours in a day at their workplace-either it is on a construction site, in an office or factory[6]. Occupational health is principally the science of protecting man's health by controlling the conditions of workplace. The prominence of occupational health and safety has been recognized from centuries. Life is changing so rapidly, work demand is increasing day by day which requires attention on assurance of workplace health and safety, occupational hygiene and implementation of the safety requirements[7].

Occupational Health and Safety also aims to protect the co-workers, family members, employers, suppliers, and customers, nearby community or those people who get affected by the working environment. The establishment of good working occupational health and safety standards is necessary because of the moral, economic and legal perspective. Commonly, workplace health and safety have been upgraded the developed nations, though the condition in the developing states is uncertain due to the lack of record keeping, reporting and disease reorganization[8]. Occupational Health and Safety encompasses all the work related factors, functioning methods setting and workplace surroundings that possibly will result in injury, diseases or lack of health. It also comprises workplace instability, chemical and physical hazards such as inhaled dust, fumes gases, vapors, skin disease from irritating substances or

deafness from noise, medical risk from heavy or monotonous work of high speed or prolong working hours[9]. For many hazards such as (dust, fumes, and noise levels) risk analysis may involve some form of measurement and workplace monitoring. Risk analysis includes the evaluation of hazard exposure, the possible consequences and the factors that affect both the existence of the hazard and the magnitude of the risk[10]. Inadequately designed workplaces that require uncomfortable posture, prolonged sitting and monotonous motions are considered to be the major cause of work-related musculoskeletal orders[11]. Noisy environments are hazardous to hearing. Noise induced hearing loss is among top three causes of hearing impairment in Africa. Heat influences working capacity and decreases productivity. It increases fatigue, thus human errors and accidents[12].

An earlier study was carried out which documented the health issues commonly faced by the call center operators in particular. It included Physical Health Problems communicated inform of musculo skeletal disorders, digestive ailments, ocular, voice and hearing problems; Psycho-social problems such as disturb family relations, poor leisure opportunity, immoralities such as alcohol and to baccouse, and poor eating habits; psychological problems which includes sleep disorders, anxiety, trauma and disturbance in biological rhythms[13].

Lack of awareness and the no implementation of occupational health and safety policy in the industry produce various risks that can affect the life of workers today. Not only the presence of physical (light intensity, temperature, noise) and mechanical hazards of hazards of the industry are the major reasons of the occurrence of various health disorders but lack of general cleanliness, prolonged sitting, hygiene, repetitive motions, working postures, and no use of personal protective equipment by the workers are responsible for the poor health of workers. Absence of health and safety practices in the industry will not only affect the workers but will also affect the production of the industry.

Literature Review: The world has become a fast global village and communication is an essential element in this development course. In telecom industry, quantum development is innovative as it replaces one innovation over the other just in couple of days.

A most important breakthrough is the wireless telephone system, which comes either in fixed wireless lines or the global system for mobile communication (GSM)[14]. Industrialization is a process of transformation of a predominantly non- industrial community into a predominantly industrial community. The significance of industrialization as an engine of financial growth and expansion cannot be exaggerated. Production of industries generates job options at advanced skill stages, ease denser associations across the services and agricultural sectors, linking rural and urban wealth and involving consumer, intermediate and capital goods business[15].

According to an estimate, almost 2 million people die every year due to workplace hazards. Another study states that around 160 million cases of occupational diseases occur worldwide on annual basis which includes breathing and heart related problems, cancer, loss of hearing, reproductive and muscle disorders, psychological and neurological diseases. There is also an increased number of employees who complain about overburden and work related stress. All of these factors are psychologically associated with insomnia, depression and tiredness with a higher rate of heart related disorders. In developing countries almost 5-10% employees and 20-50% in developed countries are likely to have access to sufficient occupational health amenities. Still in developed nations, a large ratio of work sites is not scrutinized on regular basis[16].

A large number of people are associated with customer care centersworldwide[17]. Call centers have turned into one of the most consequential resources through which the knowledge society intends to facilitate the customers. The call center industry has attained much negative attention in the media. Call centers have been regarded as 'electronic sweetshops' in all social mediums, with the term 'battery hens' which illustrates the rigorous and hectic nature of being a call operator[18]. Call centers have been referred to as Tayloristic and" the new sweatshops", all terms which bring back memories of the negative aspects of industrial mass production[19]. Other studies portray a more positive image of the work environment in contact centers, even though they also find that the work is fairly exhaustive and controlled[20].

A lot of money has been invested on human capital and technology and perhaps this is the reason that call centers have been intensely scrutinized. Different researches have revealed that 60% of call center operating costs are accredited to labor[21]. Thus, the employees of telecom industry have monotonous stressful and exhaustive work those consequences in employee burnout which is characterized by impaired sleep. Poor sleep highly contributes in fatigue[22]. Also, an increased Job stress prevailing at the Call Centers might adversely affect social health of the Employees. It was proved that a gents engaged in shift hours were facing sleep disturbances and major behavioral and health related diseases have been reported[23].

An abrupt and sudden increase in noise level which is passed on to the operator's ears through their headphones is termed as 'Acoustic Shock'. Operators complain of being shocked by the incidents and experienced a variety of symptoms which also includes pain in the ear[24]. There may be different work related hazards present in the telecom industry particularly in Call centers. In a Telecom Industry, Physical Hazards include noise, heat, ventilation, light, machines, vibration, Radiation etc. Chemical Hazards include dusts, liquids, gases, mists, vapors, Odor etc. Biological Hazards can also occur in telecommunication industry which may include Germs. Ergonomics include Postures, massive load, exhaustion; reiteration anxiety consists of shift job, over-supervision,

accountability, deficient of control etc. Occupational Diseases, Respiratory problems, Dermatitis, Hematological problems, Occupational Cancers, CNS, CVS, Liver disorders, renal problems. Probably, noise is the most common occupational and environmental hazard. According to a study, around 30 million Americans are experiencing potentially injurious sound levels at their workplaces. Hearing loss is a major wide spread persistent condition which affect older adults[25].

Hearing loss of a level which is sufficient to intervene with social and job related communication is among the most common neural impairments[26]. The people working under such situations should be confident enough to ask for the better adjustments as hearing loss might pose an immediate effect on the person. It is quite evident that workplace noise is the major cause of occupational hearing loss[27].

Noise induced hearing loss might be a consequence of long term exposure to the hazard. Though it is an irreplaceable loss but yet absolutely a preventable disease[28]. Research has proved that the people with effected hearing speak louder instead of the people with normal hearing, they think that people cannot hear them as they are not able to hear. Similarly, also revealed that work stress and repetition, was also there[29]. Other psychological impacts such as stress and anxiety and physiological problems like high blood pressure and heart ailments are common health impacts associated with high levels of noise contact[30]. After presbycusis (age-related hearing loss), noise induced hearing loss is the second major root cause of hearing deficiency. Exposure to recreational and occupational noises detrimental to hearing loss which is 100 percent avertable[31].

Excessive noise on the workplace is the foremost cause of occupational hearing loss. Several factors are involved in hearing loss- occupational and/or environmental noise disclosure, noxious drugs and substances, physical trauma, transmittable disease, developmental syndromes, and the aging process. Moreover, all of these factors can be further affected by individual genetic vulnerability[32].

"The present study deals with the identification of potential health hazards and risks to call center employees associated with their job activity, health assessment through collection of data about socioeconomic status, health determinants and health status of these workers and prediction of health consequences of the project. It will also suggest mitigation measures to be considered for the minimization of health risk to workers for future".

Materials and Methods

The study was conducted for four months and included periodic visits of the sites.The present study was conducted for three selected sites. A questionnaire was designed for health assessment of the workers. Total 150 individuals including control group were interviewed through the questionnaire.

Health surveillance data about hearing was compiled during audiometric screening. Hearing screening of all the subjects of target group (n=100) and control group (n=50) was carried out with Ambco Field Audiometer 1500 (USA) with background noise level less than 20 db. Time selected for the audiometric test was right exactly after working hours. Hearing level at different frequencies was plotted in the form of graphs i-e; audiograms. Results of hearing screening were interpreted in the audiogram and compared with the generally used international classification system of hearing degrees provided by American Speech-Language-Hearing Association[33].

Statistical analysis was carried out by using SPSS and standard deviation (SD) and standard error means (SEM). Their comparison was made with ASHA hearing classification[33]. The study examined the relationship between the nature of work in call center with their hearing performance and general health condition. Graphs and tables were used for the result presentation.

Results and Discussion

The results clearly indicate that these people working in call centers present have to face some kind of health hazards consisting of physical, ergonomical, chemical, mechanical, biological and psychological hazards related to their job activity. In spite of extensive and in extensive nature of call center job, it is not taken care off as per demand. There was no provision of PPEs and it acts as evidence in this regard. High levels of noise, vibrations, dust, poor work positions and repetitive movements were considerable hazards noticed in the survey. This condition introduces multi factorial and multidimensional risks to the environment and workers that demand management applications beyond the routine.

In the present research, it was revealed that noise and vibrations were predominant work-place hazards Acoustic shock, other operators' voices and the ventilation system were reported as the most common noise sources. Statistics of the present study revealed that 21% of the total call center workers were suffering with hearing loss problem. The results are similar to those outlined by Gavhed and Toomingas in 2007 in which the call center industry was regarded as one of the most unsatisfactory workplace with a great probability of noise exposures and high risk of noise induced hearing loss. A similar supportive study was carried out in Australia by Wescott in 2006 in which reported hearing loss was 18% and hearing assessment showed atypical hearing loss patterns [34].

The current study revealed that call center employees were facing high rate of musculoskeletal disorders.65% of call center employees complained about their back pain problem whereas, 58% had fatigue. These findings were supportive to those reported by Hoekstra et al. in 1995 in which the ratio of musculoskeletal issues among the call center workers has been scrutinized in various researches. In a study which was carried

out in America revealed that out of 100 employees, 68% were of the view that they are suffering with musculoskeletal pain from last 12 months and 37% reported this as being on regular basis. Another research of 108 call center employees was conducted in Brazil exposed that 43% of the employees were having pain in neck and shoulders whereas 39% were suffering with wrist or hand pain[35]. Results from other related researches had shown that neck and hands related ailments were more common in call center employees[36]. During contemporary study, it was also revealed that, around 65% individuals were having visual fatigue by the end of the day. For the people who have to work on computer screens and communication is done through telephone, similar rates of 67% and 73%, were found respectively[37]. It was also identified that most prevalent diseases were fatigue and diseases related to skeletal and musculoskeletal system. These diseases are triggered because of ergonomical hazards at workplace. For instance, uses of excessive force/overloading improper work position and repetitious actions. Findings of current research are confirmatory to the former work and it was discovered that call center employees had an increased rate of musculoskeletal disorders owning to poor work postures. Fatigue and tiresome attitude were commonly observed among workers. Risk of occupational hazards increases due to unsafe working conditions and heedless and oblivious attitude[38]. Employees were not satisfied with the available health services; they were found to be insufficient and marginal. It is a reality that call center industry provides job opportunities for young skilled workers with high educational backgrounds. However, its cost has to be paid by the employees. Though it seems challenging to procure exact figures but then again fatal injuries, high risk of occupational illnesses and mortality often exceed those in other jobs[39].

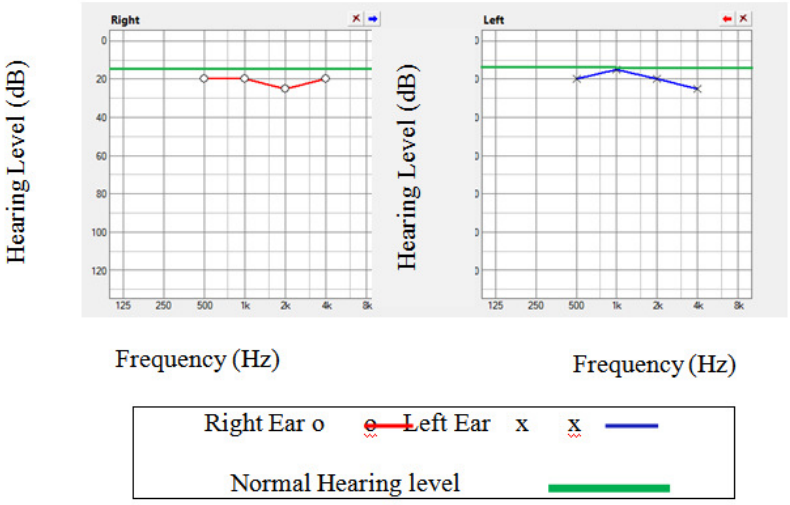

Figure-1
Audiogram of Call Center Workers showing slight hearing loss in both ears

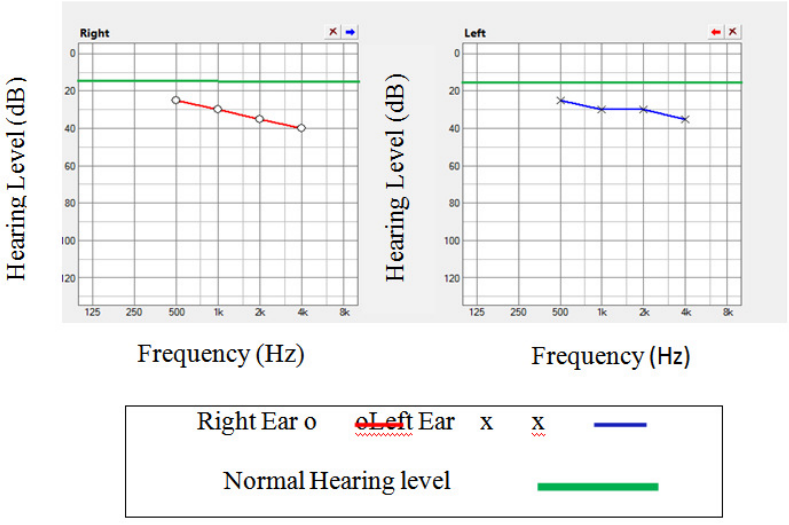

Figure-2
Audiogram of Call Center worker showing mild hearing loss in both ears

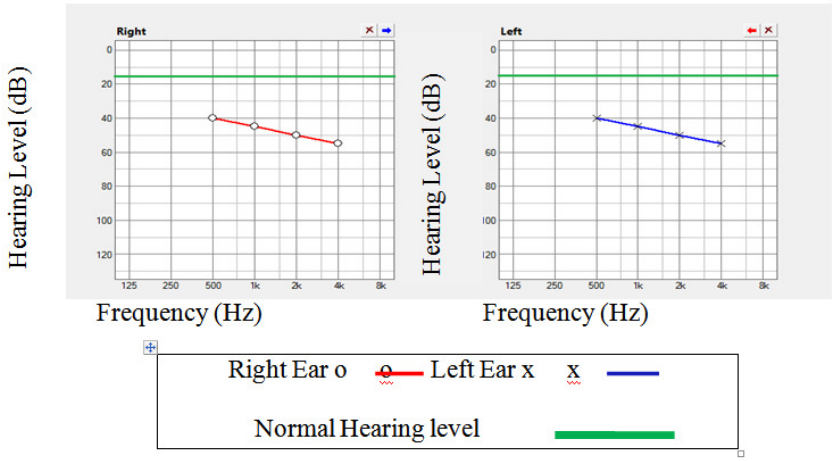

Figure-3
Audiogram of Call Center worker showing moderate hearing loss in both ears

The descriptive analysis of data revealed the mean scores and the standard deviation (S.D.) of the study variables. It also showed the minimum and maximum values of the variables (Table-1).

Analysis of relationship: Analysis of relationship within the variables was determined by Pearson's correlation with the level of significance set at a 0.01 level (2-tailed). Results of Table-2 revealed a significant correlation of hearing loss with work experience (.525<0.01) and BMI (.001< 0.01). The Pearson's correlation of hearing loss with age (.068 > 0.01), and BMI (.001 > 0.01) was more than 0.01thus showing a positive correlation. Thus the data analysis indicated that there was a significant difference between the hearing loss of call center employees and also that there was a notable correlation of hearing loss with age, weight, BMI and most of all working experience of the workers.

Table 1
Table showing descriptive analysis of the data collected from the call center employees

Descriptive Statistics										
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**	**Variance**	**Skewness**		**Kurtosis**	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Age	100	20.00	34.00	25.8600	2.91641	8.505	.525	.241	.259	.478
Family	100	2.00	16.00	6.5400	2.33731	5.463	.970	.241	1.850	.478
Marital Status	100	1.00	2.00	1.7300	.44620	.199	-1.052	.241	-.912	.478
BMI	100	1.00	4.00	2.2300	.66447	.442	.127	.241	-.037	.478
Experience	100	.17	7.00	2.4441	1.71135	2.929	.839	.241	-.188	.478
Hearing loss	100	1.00	3.00	1.6500	.71598	.513	.634	.241	-.814	.478
Valid N (list wise)	100									

Table 2
Inferential analysis of the data collected from the call center employees included Pearson's correlation

Correlations							
		Age	**Family Size**	**Marital Status**	**BMI**	**Experience**	**Hearing Loss**
Age	Pearson Correlation	1	.097	-.472**	.335**	.061	.068
	Sig.(2-tailed)		.336	.000	.001	.546	.500
	N	100	100	100	100	100	100
Family Size	Pearson Correlation	.097	1	.025	-.120	-.019	-.115
	Sig.(2-tailed)	.336		.805	.235	.853	.253
	N	100	100	100	100	100	100
Marital Status	Pearson Correlation	-.472**	.025	1	-.265**	.073	-.077
	Sig.(2-tailed)	.000	.805		.008	.473	.444
	N	100	100	100	100	100	100
BMI	Pearson Correlation	.335**	-.120	-.265**	1	.023	.001
	Sig.(2-tailed)	.001	.235	.008		.824	.992
	N	100	100	100	100	100	100
Experience	Pearson Correlation	.061	-.019	.073	.023	1	.525**
	Sig.(2-tailed)	.546	.853	.473	.824		.000
	N	100	100	100	100	100	100
Hearing Loss	Pearson Correlation	.068	-.115	-.077	.001	.525**	1
	Sig.(2-tailed)	.500	.253	.444	.992	.000	
	N	100	100	100	100	100	100

**.Correlation is significant at the 0.01 level (2-tailed), *.Correlation is significant at the 0.05 level (2-tailed).

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