

## FREQUENCY OF NECK PAIN AMONG CALL CENTER EMPLOYEES OF LAHORE PAKISTAN

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### ABSTRACT

**Introduction:** Prolonged use of computers during daily work activities and recreation is often cited as a cause of neck pain. This study identifies frequency of neck pain and its association with age and gender. **Methods:** A cross-sectional study of 262 call center employees from Abacus, Shaheen Complex, Lahore, Pakistan was conducted using Nordic questionnaire. Sample size of 262 was calculated by using online Epi Tools software. Data was collected in the time span of 3 months. Data was analyzed using statistical package for the social sciences (SPSS) version 21. Descriptive and analytical statistics were taken out according to the type of variable and p value less than 0.05 was considered significant. **Results:** Results showed that mean  $\pm$  SD age of  $26.05 \pm 3.682$  and mean  $\pm$  SD working hours of  $48.65 \pm 13.03$ . Males were 81.3% and females were 18.7%. Results also showed that 51.91% participants reported neck trouble. There was significant association present between gender and neck trouble. P value was 0.003. There was significant association present between working hours a week and neck trouble. P value was 0.000. Age and neck trouble were not statistically significant (0.318). **Conclusion:** This study concluded that high frequency of neck pain was found in a population of call center operators, with almost half of the participants included in the study had neck pain. Significant association was found between gender and neck pain. Similarly, statistical significant findings were found between working hours and neck trouble. While no significant findings were found between age and neck trouble.

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### INTRODUCTION

Neck pain could be a feeling of discomfort, pain and stiffness felt behind the neck from C1 to C7 cervical vertebrae. The second commonest contractile organ (MSK). Neck pain will radiate to shoulders, scapular region and down to the arm additionally to the pinnacle. This pain may also originates from nerve root compression. Pain may originates from center of the neck sides of the neck and from behind the neck.<sup>2</sup> Neck pain or cervical pain is felt as feeling of discomfort originated from the region between superior nuchal line and spinous process of T1 vertebrae. This could originates laterally, superiorly and inferiorly from the margins of the neck.<sup>3</sup> Neck pain can also originates from the disc connected problems as an example degeneration of the disc

which may cause outpouring of the jelly like fluid from the center of the disc inflicting the slender areas which will cause compression that ends up in neck pain.<sup>4</sup> Patient with cervical pain can also have headache, cramps and dizziness. Because of misdiagnosis neck pain causes significant socio-economic burden on population of specific space. As an example within the kingdom of the Netherlands and Sweden the general health care expenditures on neck pain are 1 chronicles of gross nation products(GNP).<sup>5</sup> Classification of neck pain in step with time period is chronic and acute, in step with mechanism there are further two subtypes of neck pain, neuropathic and mechanical. Mechanical pain involves muscles, bones and ligaments. Whereas on the other hand neuropathic pain is cause by any issue that

causes irritation to nerve root or injury to peripheral nerves. Mechanical pain has its own treatment protocols as compared with neuropathic pain. Complete history should be taken to properly diagnose the cause which is responsible for neck pain. Neuropathic pain typically radiates and patient defines neuropathic pain like shooting and burning with symptoms of parasthesia, numbness, tingling etc. Mechanical pain is felt like throbbing pain and is totally different from neuropathic pain. On rotating head contra laterally if pain aggravates then it is mechanical pain, however if pain aggravates on turning head in same direction then it should be neuropathic pain it additionally increase symptoms. Cervical extension aggravates stricture pain whereas cervical flexion aggravates disc related pain. C6 and C7 are the most commonly affected vertebrae.<sup>6</sup> Neck pain is extremely common among employees particularly among those that work totally on computers. It is declared that neck connected issues are multidimensional together with emotional, psychological and physical status. It is declared that employment connected neck disorders are associated and influenced by complicated array of individual physical and psychological factors. There is a big relationship between neck pain and holding the neck in a forward bent posture for an extended time. Mental weariness and lack of workers is additionally accountable for neck pain.<sup>7</sup>

Call center workers work on computers so they are extremely vulnerable to work connected contractile organ disorders like neck pain. Work connected Musculoskeletal disorders in 2005 accounts for 30 percent. Prevalence of work related neck problems are high in computer users between 40 and 80 percent. Visual discomfort is additionally a frequent criticism expertise by computer users together with symptoms like tiredness, blurriness and unable to focus.<sup>8</sup> Call centers square measure lined by rules of health and safety. In step with nice United Kingdom of

Great Britain and Northern Ireland health and safety executives center could be a distinctive operating atmosphere as they need to figure on each PC and telephone. Long span of duty hours and high turnover of staff.<sup>9</sup> 1% of the European operating population is used at call centers.<sup>10</sup>

Purpose of the current study was to evaluate the frequency of neck pain among call center operators during day and night times in Lahore Pakistan. Aim of the researcher conducted this study was that this was never conducted before in Lahore, Pakistan. Hence, the purpose of this study was to determine the frequency of neck pain among call center operators.

### LITERATURE REVIEW

Joanne O. Crawford (2007) studied musculoskeletal disorders within the telecommunications sector and conclude that a number of risk factors for musculoskeletal disorders are present in telecommunication sector. Role of psychological factors in heavy physical work in call centers is unclear.<sup>12</sup>

Desiree gavhed (2007) observed physical working conditions in a sample of call centers in Sweden and their relations to directives, recommendations and operators comfort and symptoms and conclude that there are various qualities of physical working conditions in a sample of 16 Swedish call centers. This study highlighted the problems in working environment of Swedish call centers to reduce the risks for musculoskeletal problems in future.<sup>11</sup>

Parisa Nejati (2014) performed a study on association between forward head posture, rounded shoulders with neck pain in Iranian office workers and conclude that angle between cervical vertebrae and head tilt is strongly associated with the presence of neck pain only in working posture ( $p < 0.05$ ). if the head is in straight position then the chances for pain is rare while shoulder protrusion is more susceptible to

musculoskeletal disorders.<sup>13</sup>

Allen Toomingas, Desiree Gavhed (2008) performed a study on workstation layout and work postures at call centers in Sweden. Study includes 16 call centers and 156 computer operators. There is no doubt that the furniture and equipment provided in the call centers is good and according to law but the issue is with their use, how they adjust them to attain good working postures. They can adjust their seat height according to their comfort level. Decline in musculoskeletal symptoms is strongly associated with the use of furniture, their placement and adjustment.<sup>14</sup>

Leon Straker, Rebecca A. Abbott, Marina Heiden, Swend Erik (2012) performed a study in which they provide sit stand workstations in call centers and check association of use and ergonomic awareness with sedentary behavior and stated that workstations with a sit stand desk reduce the time of sitting and therefore they assist office workers in preventing musculoskeletal problems. Ergonomic training is found beneficial in preventing musculoskeletal problems.<sup>15</sup>

Michelle M Robertson (2012) did a great job by providing ergonomics training and a sit stand workstation and then he calculated their effect on musculoskeletal symptoms, visual symptoms and the performance of office workers and the result shows participants with ergonomic training are less affected by musculoskeletal and visual discomforts than women. Ergonomics training and sit stand workstation helps the workers to adopt healthy computing behavior and able to perform better and better. This study provides the base for the importance of occupational safety and health.<sup>9</sup>

Yen Hui Lin (2008) conducted a study to find physical discomfort and psychosocial job stress among male and female operators at call centers in Taiwan and conclude that women are more

prone to physical discomfort and men are less likely to complain about physical discomfort. Work related painful throat, hoarse, eye strain and musculoskeletal problems are common among call center workers and women complains the most.<sup>16</sup>

The research shows that there was 74.7% prevalence of neck pain among drivers. 27% participants experienced neck pain intensity of 4 out of 10 visual analogue scale (VAS), 2% experienced 1 out of 10 VAS and 66.1% participants reported that the symptoms were worsen by forward flexion posture. The %age of drivers that stopped driving due to neck pain was 28.6%.<sup>3</sup>

Deborah Alperovitch-Najenson had a cross sectional survey to evaluate the prevalence of upper body quadrant pain among Israeli professional urban bus drivers and to evaluate the association between individual, ergonomic, and psychosocial risk factors and occurrence of neck pain, concluded the neck pain prevalence was not associated with work-related organizational stress factors. The prevalence of neck pain during 12-month period was 21.2%, followed by upper back: 8.3%, shoulder: 14.7%, elbow: 3.0%, and wrist: 3.0% pain.<sup>17</sup>

Massimo Bovenzi in 2014 conducted a prospective cohort study to find the neck and shoulder pain among the professional drivers. The sample size of this study was 537 male professional drivers the outcomes were 31.9% neck pain, 21.4% shoulder pain. Multivariable data analysis ruled out that physical load factors, cumulative whole body vibration (WBV) and adverse psychosocial environment at the workplace, as well as individual-related psychosomatic and psychological problems, are significant predictors of the occurrence of neck and shoulder disorders in driving occupations.<sup>18</sup>

Massimo Bovenzi in 2014 conducted a



of the purpose of study. Total of 400 questionnaires were distributed, 287 were returned while 25 didn't lie in the inclusion criteria. Therefore, data of 262 participants was included in this study. Data was collected in the time span of 3 months.

**3.9 Statistical Procedure:**

Data was analyzed using statistical package for the social sciences (SPSS) version 21. Descriptive and analytical statistics were taken out according to the type of variable and p value less than 0.05 was considered significant.

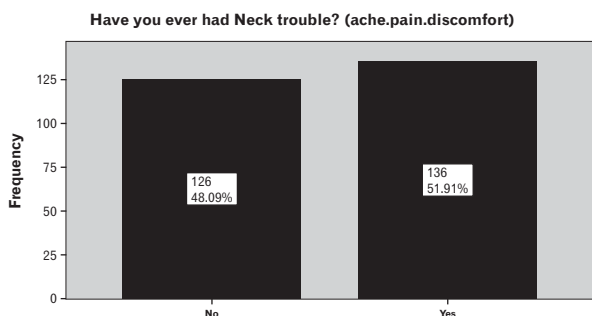
**RESULTS**

Total of 400 questionnaires were distributed, 287 were returned while 25 didn't lie in the inclusion criteria. Therefore, data of 262 participants was included in this study.

**Table 1: Descriptive statistics of age, gender and working hours a week**

Age			
Mean	Std. Deviation	Minimum	Maximum
26.05	3.682	21	37
Working hours a week			
Mean	Std. Deviation	Minimum	Maximum
48.65	13.03	25	100
Gender			
	Frequency	Percent	
Male	213	81.3%	
Female	49	18.7%	
Total	265	100%	

Above table showed mean ± SD age of 26.05±3.682 and mean ± SD working hours of



**Figure 1: Above figure showed that 51.91% participants reported neck trouble**

48.65 ± 13.03. Above table revealed that males were 81.3% and females were 18.7%.

**Table 2: Association of gender and neck trouble**

**Gender \* Have you ever had Neck trouble? (ache,pain,discomfort) Crosstabulation**

Count		Have you ever had Neck trouble? (ache, pain,discomfort)		Total	Pearson Chi Square	P value
		No	Yes			
Gender	Male	93	120	213	8.952	0.003
	Female	33	16	49		
Total		126	136	262		

Above figure showed that 51.91% participants reported neck trouble.

Above showed that there was significant association present between gender and neck trouble. P value was 0.003

**Table 3: Association of working hours and neck trouble**

**On average how many hours a week do you work ? \* Have you ever had Neck trouble? (ache,pain,discomfort) Crosstabulation**

Count		Have you ever had Neck trouble? (ache, pain,discomfort)		Total	Pearson Chi Square	P value
		No	Yes			
On average how many hours a week do you work ?	20-40 hours	56	15	71	45.914	0.000
	41-60 hours	65	94	159		
	61-80 hours	5	14	19		
	81-100 hours	0	13	13		
Total		126	136	262		

Above showed that there was significant association present between working hours a week and neck trouble. P value was 0.000.

**Table 4: Association of age and neck trouble.**

**Age\* Have you ever had Neck trouble? (ache,pain,discomfort) Cross tabulation**

Count		Have you ever had Neck trouble? (ache, pain,discomfort)		Total	Pearson Chi Square	P value
		No	Yes			
Age	20-30 years	109	123	232	0.998	0.318
	31-40 years	17	13	30		
Total		126	136	262		

Above table showed that age and neck trouble were not statistically significant (0.318).

## DISCUSSION

This study used Nordic questionnaire to assess the frequency of neck pain among call center employees. Work related neck pain is a common problem for office computer workers,(12) especially since an upward trend for computers use can be seen each year. Today, a large number of people use computers for work and recreation, taking up a great deal of their time each day. In this cross sectional study high frequency of neck pain was found in a population (51.91%) of call center operators, that almost half of the participants included in the study had reported neck pain. This study also found that there was association between gender and neck pain ( $p= 0.003$ ) and there was also a link present between working hours a week and neck pain ( $p=0.000$ ).

Similar to this study, d' Errico et al., conducted a study in Italy to find the upper extremity musculoskeletal symptoms among call center employees and reported that symptoms in the neck were more prevalent (39%). (13)In contrast to this study, d' Errico et al., found that no significant difference by gender in the prevalence of symptoms while this study reported the significant association ( $p=0.003$ ) between gender and neck pain. (13)Similarly, Barbara Charbotel et al., reported 59% of pain in the cervical region.<sup>14</sup>

Shahla Eltayeb et al., found prevalence of neck pain in office workers of 33% that is similar to finding found in this study. Similarly, the difference in the prevalence rate for neck and gender was statistically significant. (15). Prawit Janwantanakul et al., reported 42% neck prevalence that is similar to this study findings. Similar to this study finding, there was no association between age and prevalence of musculoskeletal symptoms.<sup>16</sup>

## CONCLUSION


This cross sectional study of 162 call center employees highlighted the health impact of working hours and gender on neck pain. This study concluded that high frequency of neck pain was found in a population of call center operators, with almost half of the participants included in the study had neck pain. Significant association was found between gender and neck pain. Similarly, statistical significant findings were found between working hours and neck trouble. While no significant findings were found between age and neck trouble.

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### AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Umar Jamil	Writing/ Data collection/ Data Analysis	
2	Masooma Gull	Supervisor	