Original Article

Musculoskeletal disorders of the neck and upper extremity in Computer workers

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Objective: To evaluate the prevalence of Work related musculoskeletal disorders (WRMSD) for computer office worker, who work 6 hours or more per day on the computer.

Methodology: This cross sectional study was conducted in different government and private banks and mobile franchises. Demographic information, work ergonomics and relevant data were collected by using a standardized questionnaire after obtaining signed consent from them. Data were analyzed through SPSS version 16.

Results: Out of 150 potential subjects, 128 were returned completed questionnaires with the response rate of 85%. Age ranged between 25-35 years. Neck associated complaints were in 47.42% males and in 67.74% females. Shoulder complaints were 45.36% in males and 77.42% in females. Hand complaints were 20.62% in males and 54.84% in females.

Conclusion: The prevalence rate of WRMSD was higher among females than males. (Rawal Med J 201;43:52-55).

Keywords: Musculoskeletal disorder, computer users, pain.

INTRODUCTION

Work related musculoskeletal disorders (WRMSDs) of the upper extremity are very common occupational problem in modern society.[1] These disorders have been defined as "disorders of the soft tissues and their surrounding structures not resulting from an acute or instantaneous event (e.g., slips or falls)."[2] Today, the computer has become an essential part of our life, including education, work, business and leisure activities. Work on computer for long duration in an incorrect posture causes fatigue and pain in neck, shoulder, arms, wrist and back.[3] Epidemiological studies have shown a possible causal relationship between computer work and subjective complaints in the arm, neck and shoulder.[4]

WMSDs of the upper extremity are very familiar occupational problems in modern society.[1] A study by Prakash et al reported that the causes of these disorders are repetitive motions, fixed body positions, the use of force and long standing muscular contractions, are products of the accumulated effect of repeated traumas associated with work risk factors.[5]. They may be caused or aggravated by prolonged adoptive posture and repeated movements.[6] In the European Union, one year prevalence rate of MSDs was 23%,[7] and computer users are at increased risk of upper limb MSDs.[8] In Taiwan prevalence of MDSs in computer users was more than 60%.[9]

A study from Sudan showed that the incidence of neck complaints was 64% and shoulder complaints 41%.[10] A survey in 15 European countries showed 25% prevalence rate of neck/shoulder and arm complaints.[11] According to the report of the US Bureau of Labor and Statistic, MSDs accounted for 26% of all workplace injuries in 2000.[12] The purpose of this study was to evaluate the prevalence of WRMSD for computer office worker who work 6 hours or more than 6 hours per day on the computer and evaluation of physical, psychological and other associated risk factors.

METHODOLOGY

This cross sectional study was conducted between February and April 2015, at different work locations (Banks and mobile franchises) of Faisalabad, where working on the computer was

more than 6 hours. We selected 150 participants for this study, out of which 22 were excluded due to unfilled questionnaires and not met the inclusion criteria. The office workers who performed their job on the computer for at least 6 hours per day and working on the same position from at least 1 year were included. Musculoskeletal disease like osteoarthritis, rheumatoid arthritis, pervious surgery of upper extremity and age more than 49 years were excluded from the study.

Convenience sampling was used and data were collected through The Maastricht Upper Extremity Questionnaire (MUEQ) questionnaire, which was distributed and collected as hands on after written informed consent from all participants. Questionnaire was distributed to 150 subjects out of whom 128 filled questionnaires were returned with the response rate of 85.33%.

An English version of MUEQ was used as a data collection instrument. MUEQ questionnaire has 95 questions that cover six main domains (1. workstation, 2. body posture, 3. job control, 4. job demand, 5. break time and 6. social support) and socio demographic data (gender, age, employment status). It has a completion time almost 20 min.[13] Data analysis was done by using SPSS version 16.

RESULTS

Around 128 office computer workers out of 150 questionnaires responded to the questionnaire with a response rate of 85.33%. The questionnaire was filled by both males and females. The percentage of respondents working 5 days a week was 75.8% for males 24.22% for females. The percentage of respondents who worked more than 6 hours female participants was 83.78% and for male participants 24.22%. The mean age was 30.78 and 65.63% of study participants were between 25-35 years, out of which 48.44% were male.

About 41% of males and 12% of females who worked for 6-7 hours, among 8-9 hours working persons 28.13% were male and 1.72% females. Similarly, among workers with more than 10 hours working 7.81% were males and 0.78% females (Table 1).

Table1. Descriptive characteristics of study Population (n=128).

AGE			
	All	**Male**	**Female**
< 25 years	21 (16.41%)	17 (13.38%)	4 (3.13%)
25-30 years	47 (36.72%)	32 (25%)	15 (11.72%)
30-35 years	37 (28.91%)	30 (23.44%)	7 (5.47%)
35-40 years	18 (14.06%)	13 (10.16%)	5 (3.91%)
>40 years	5 (3.91%)	5 (3.91%)	0 (0%)
No. of working years in current position			
1-2	44 (34.38%)	34 (26.56%)	10 (7.81%)
2-4	38 (29.69%)	31 (24.22%)	7 (5.45%)
4-6	10 (7.81%)	8 (6.25%)	2 (1.56%)
6-8	18 (14.06%)	11 (8.59%)	7 (5.45%)
8-10	10 (7.69%)	9 (7.03%)	1(0.78%)
>10	8 (6.25%)	4 (3.13%)	4 (3.13%)
No. of working hours with computer			
6-7	67 (52.34%)	52 (40.62%)	15 (11.72%)
8-9	51 (39.84%)	36 (28.13%)	15 (11.72%)
>10	10 (7.81%)	9 (7.03%)	1 (0.78%)

Workers who work more than 10 hours on computers have more complaints of arm, neck and shoulder. Similarly individual's age more than 40 years reported more complaints than younger individuals.

Prevalence of WRMSD during the previous year was detected by a number of complaints divided by total respondents. The anatomical complaints varied among males and females, the neck associated complaints (47.42%) in males and (67.74%) in females, As seen from Table 1, 67 participants reported neck complaints out of which 70.15% complaints were noted between the age group of 25-35 years. Shoulder complaints were (45.36%) in males and (77.42%) in females, 47.06% shoulder complaints were reported on right side. Participants of ages between 25-35 years reported more shoulder complaints (69.12%). Upper arm complaints were (17.56%) in males and (29.03%) in females, and were mostly reported on the right side. Elbow complaints were (13.44%) in males and (25.81%) in females: most participants have problems on both sides. The data indicate Lower arm complaints (16.5%) in males and (25.81%) in females, wrist complaints (18.56%) in males and (35.48%) in females, hand complaints (20.62%) in males and (54.84%) in females.

Table 2. Upper extremity complaints distributed by anatomical location.

Males 97							
	Neck	**Shoulder**	**Upper arm**	**Elbow**	**Lower arm**	**Wrist**	**Hand**
Right side	46(47.42%)	19(19.59%)	10(10.31%)	6(6.19%)	6(6.19%)	7(7.22%)	8(8.25%)
Left side		5(5.15%)	2(2.06%)	2(2.06%)	2(2.06%)	3(3.09%)	1(1.03%)
Both		20(20.62%)	5(5.19%)	5(5.19%)	8(8.25%)	8(8.25%)	11(11.34%)
Females 31							
Right side	21(67.74%)	13(41.94%)	4(12.90%)	2(6.45%)	3(9.68%)	5(16.13%)	10(32.26%)
Left side		0(0%)	0(0%)	1(3.23%)	0(0%)	0(0%)	0(0%)
Both		11(35.48%)	5(16.13%)	5(16.13%)	5(16.13%)	6(19.35%)	7(22.58%)

Complaints of Arm, Neck and Shoulder prevalence rate from previous year showed that 72.66% of study participants reported at least one complaint in the arm, neck and shoulder. Prevalence rate of Complaint of Arm, Neck and Shoulder was higher among females (87.1%) than males (68.04). Neck and shoulder symptoms ratio were high (52.34% and 53.9%, respectively), followed by hand and wrist complaints (28.9% and 22.6%, respectively), upper arm, lower arm and elbow complaints (20.3%, 18.7% and 16.4%, respectively). Female complaints more shoulder complaints 74.2%.

This study demonstrated the prevalence of Complaint of Arm, Neck and Shoulder and its associated risk factors among computer office workers. It's also shows socio demographic factors and complaints among computer office workers, according to anatomical location.

DISCUSSION

The results of this study demonstrate that the study participants of age group >40 years and who work >10 hours per day reported more complaints than the workers who work for 6-7 or 8-9 hours per day. These results go in the favor of other studies findings that older workers had higher prevalence rates of Complaint of Arm, Neck and Shoulder.[3,14] In our study, almost 72.66% of study participants reported WRMSD for at least one week during the previous year. The last one year prevalence rate of neck and shoulder complaints was much higher than arm, elbow and hand complaints. These results are comparable with the findings of previous studies from Netherland, Sri Lanka, and Germany.[15,16] Some previous studies showed that neck-shoulder region complaints was the most common among office computer workers, which is support results of this study.[14]

This study findings shows that prevalence of WRMSD of upper extremity among female (87.1%) was higher than males (68.04). Literature supports findings of this study. A study from China among visual display terminals users showed that women had higher (64.6%) prevalence rate than men (46.7),[17] which is comparable to the present study. Females appear to continuously report more upper extremity and neck related complaints than males.[18] Gender difference can be explained as females were more often exposed to different psychological and physical risk factors than males.[19]

CONCLUSION

The estimated one year prevalence rate of WRMSD was high among computer office workers of Faisalabad. Females reported more shoulder complaints and male had more neck complaints. This study found a strong association between gender, working hours, age and WRMSD.

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