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A STUDY ON WORK RELATED MUSCULOSKELETAL DISORDERS AND FACTORS ASSOCIATED WITH IT AMONG OCCUPATIONAL COMPUTER USERS.

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Abstract

Background Technological advances in recent years have led to the prevalence of computer and other electronic technologies in the everyday lives of people–at work place, at home and in the school to keep pace with time and progress. This study was conducted to study the Work related Musculoskeletal Disorders and factors associated with it among Occupational computer users.

Methodology: A cross sectional Study was conducted among Individuals employed for at least six months on computer work stations in a private firm using Convenient Sampling. All Individuals employed for at least six months on computer work stations in private firms were personally contacted, interviewed and examined using the pretested questionnaire till the required sample size 112 was completed. The questionnaire has two parts. Part 1 deals with personal data. Part 2 deals with Musculo skeletal disorders using adopted Nordic questionnaire. Data was entered in Microsoft excel and analyzed using SPSS.

Results: The Prevalence of Musculo-Skeletal Disorders among study population was 67%. The most common type was Neck pain (42.9%), Lower back pain (42%) followed by Shoulder pain (34.8%), Wrist pain (21.4%), Upper back pain (13.4%), Hand pain (12.5%) and Elbow pain (8.9%). Pain and Cramps were more common symptoms among the study population. The Prevalence of Musculo-Skeletal Disorders was increasing with increasing age except in above 50yrs age group. The distribution of Musculo-Skeletal Disorders was more among females than males. The Prevalence of Musculo-Skeletal Disorders was increasing with increasing Job Experience, more in over weight and Obese individuals. The Musculo-Skeletal Disorders are more in those who do not have physical activity (69%) and those who have Hypertension (78.5%). Awareness regarding Ergonomics among study population was 48.2%. 21.4% of study population received orientation on ergonomics. 33.9% were provided with ergonomic desk and chair. 24.9% of the study population take breaks during working hours.

Conclusion: The high prevalence of musculoskeletal problems emphasizes the need for continuous, motivational health education and rehabilitative measures to prevent the impact of these problems on the quality of life.

Keywords: Work-related Musculoskeletal disorders, Musculo-skeletal pain, Occupational computer users, Nordic questionnaire, Ergonomics.

1. Introduction

Technological advances in recent years have led to the prevalence of computer and other electronic technologies in the everyday lives of people–at work place, at home and in the school to keep pace with time and progress. Not only banks and government offices but also private bodies, autonomous institutions and almost every organization are computerized for smooth and faster flow of data and information.[1]

The proliferation of video display terminals (VDT), in the modern office setting has generated concern related to potential health hazards associated with their use. There have been numerous operator complaints of a wide range of symptoms and work-related musculoskeletal disorders (WMSDs) are one among them.[1]

The US Department of Labor defines work-related musculoskeletal disorders (WMSDs) as injuries or disorders of the muscles, nerves, tendons, joints, cartilage, and spinal discs associated with exposure to risk factors in the workplace. WMSDs do not include disorders caused by slips, trips, falls, motor vehicle accidents, or similar accidents[2]. The chosen term corresponds to 'cumulative trauma disorder' (CTD), 'repetitive strain injury'(RSI), 'occupational cervico-brachial disease'(OCD), 'occupational overuse syndrome'(OOS).[3]

WMSDs account for approximately one third of all lost workday illnesses. WMSDs of the neck and upper extremities are associated with the longest absences from work and are, therefore, associated with greater loss of productivity and wages than those of any other anatomical regions.[2]

WMSDs of the neck and upper extremities arise in many forms and the symptoms are frequently non-specific. Some disorders exhibit well defined signs and symptoms (e.g. carpal tunnel syndrome, tenosynovitis) others are less defined such as myalgic conditions involving pain and discomfort, numbness and tingling sensation in neck and upper extremities.[4] WMSDs of neck and upper extremities among computer users are multi-factorial in origin mainly because of improper interaction of computer users with tool, work station and task performed.[5,6]

Although in India use of computers is increasing with the fast growing software industries as a tool for fast data processing, WMSDs have only recently been studied. In India no attention is given to health and safety of computer users. Very few studies on WMSDs have been performed in Indian government or private sectors so that the people working in high repetitive jobs remain deprived of better environmental working conditions.[7]In order for people to achieve optimal performance, it is necessary that the work places and work station provide effective support in their jobs so that they can work without discomfort or injury. Hence there is need for the person who is handling computer, the efficient way of working by adjusting work station, task and tool (computer, mouse and keyboard) in order to minimize the discomfort in long run.

The present study is conducted to study musculoskeletal disorders among Occupational computer users in Private firm and various factors associated with musculoskeletal disorders.

Aim:

To study the Work-related Musculoskeletal Disorders and factors associated with it among Occupational computer users.

Objectives:

1. To assess the prevalence of Musculoskeletal Disorders among Occupational computer users in Private firm.
2. To study the various factors associated with Musculoskeletal Disorders among the study population.
3. To assess the Knowledge on Ergonomics among the study population.
4. To suggest remedial measures and suitable recommendations

Methodology:

Study design -A cross sectional Study was conducted among Individuals employed for at least six months on computer work stations in a Private firm

Study participants/subjects- Individuals employed for at least six months on computer work stations

Our inclusion criteria included: age between 21-60 years of age employed for at least six months on computer work stations and worked for at least four hours a day for at least five days a week. We excluded subjects with recent injury such as disorders caused by slips, trips, falls, motor vehicle accidents or similar accidents

Sample size – Minimum sample size requirement for this study at 95% confidence, fixing 10% allowable error and considering Musculo-skeletal disorder prevalence as 63%[8], was found to be 112 including additional 20% to compensate for non response for incomplete questionnaire.

Sampling procedure – A cross sectional Study was conducted among Individuals employed for at least six months on computer work stations in a Private firm using Convenient Sampling. The purpose of the study was explained to the participants and consent taken. All Individuals employed for at least six months on computer work stations in private firms were personally contacted, interviewed and examined using the pretested questionnaire till the required sample size was completed.

Measurement/Parameters -

The survey instrument has two parts. Part 1 deals with personal data such as age, sex, height, weight, regular exercise and job details such as experience in years, working hours per day, working days per week, and habit of taking breaks during work hours. Part 2 deals with Musculo skeletal disorders. The survey instrument used was the adopted Nordic questionnaire[9]. This standardized questionnaire includes information on Musculo skeletal complaints affecting the body regions namely: neck, shoulders, elbows, wrists/hands, upper back, lower back, hip/thighs, knees and ankles/feet.

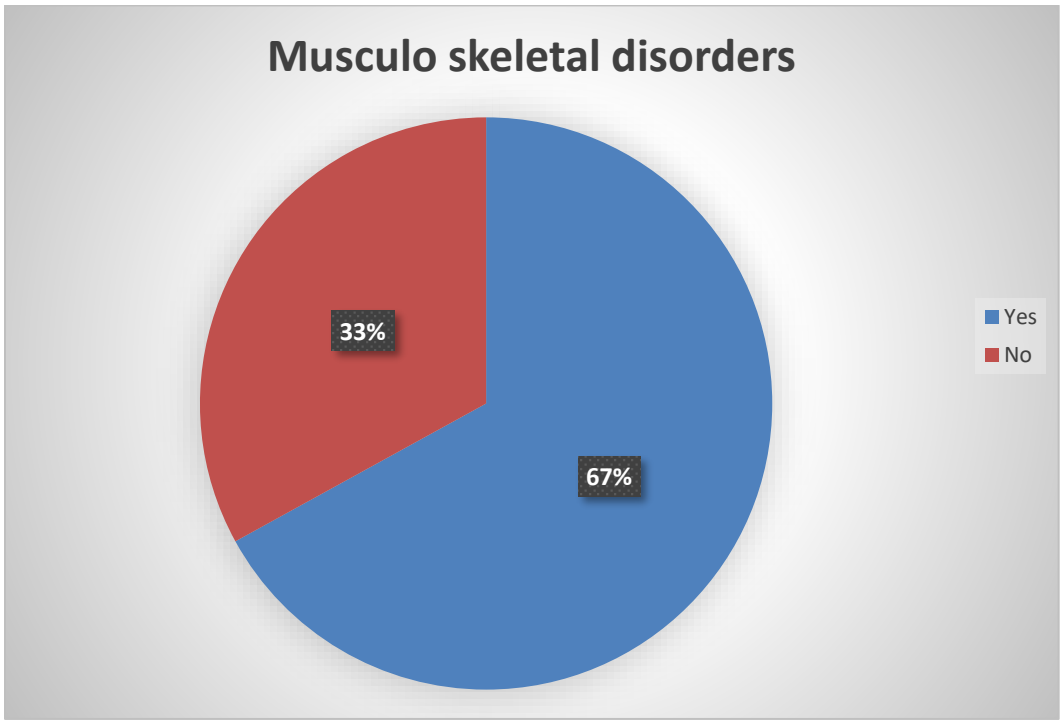
Data was entered in Microsoft Excel and analyzed using Epi-info Software. Appropriate test of significance was used wherever necessary.

Results

A cross-sectional study was conducted to assess the prevalence of work related Musculo-skeletal Disorders and the factors associated with it. All Individuals employed for at least six months on computer work stations in private firms were be personally contacted, interviewed and examined using the pretested questionnaire till the required sample size 112 was completed. The Observations of the study were as follows. The Age range study population was 23 - 58yrs. Minimum age in the study population was 23yrs and 58yrs was the Maximum age. The Mean age of the study population was 34.84 with Standard deviation 8.37. Most of the study population i.e. 73(65%) were under the age 35yrs. Among the study population 68.8% were males and 31.2% were females. Majority of the study population i.e. 37.5% were in the job experience of ≤ 5 years followed by 29.5% with 6 -10yrs job experience. 5.4% of the study population were smokers. 27.7% of the study population consume

Alcohol. 36.6% of the study population were Overweight. 55.4% were in Normal range of Body Mass Index and 7.1% were Obese.

Figure-1 Distribution of Musculo-Skeletal Disorders among the study population.



The Prevalence of Musculo-Skeletal Disorders among study population was 67% as shown in figure 1. The study population presented with various types of Musculo-Skeletal Disorders. The most common type was Neck pain (42.9%), Lower back pain (42%) followed by shoulder pain (34.8%), wrist pain (21.4%), Upper back pain (13.4%), Hand pain (12.5%) and elbow pain (8.9%). The distribution of **v**arious symptoms of Musculo-Skeletal Disorders among study population was studied. Pain and Cramps were more common symptoms followed by Stiffness, numbness, and tingling among the study population.

68.7% of the study population led active life. They incorporated various types of aerobic activities even in their busy schedule. 12.5% of the study population is having Hypertension, and 8% have Diabetes mellitus.

Awareness regarding Ergonomics among study population was 48.2%. While 21.4% of study population received orientation on ergonomics. 33.9% were provided with ergonomic desk and chair. 24.9% of the study population take breaks during working hours.

Table-1 Distribution of Musculo-Skeletal Disorders according to various Variables

Variable	Musculo-Skeletal Disorders	
	Present (No.%)	Absent (No. %)
Age		
≤ 30 yrs	31(63%)	18(37%)
31-40 yrs	26(70%)	11(30%)
41-50 yrs	14(78%)	4(22%)
>50yrs	4(50%)	4(50%)
Gender		
Male	45(58%)	32(42%)
Female	30(86%)	5(14%)
Job Experience		
≤10 yrs	49(65%)	26(35%)
11-20yrs	12(67%)	6(33%)
>20yrs	14(73%)	5(27%)
Body Mass Index		
18.5 – 24.99	38(60%)	25(40%)
≥25	37(75%)	12(25%)
Physical activity		
Present	51(66%)	26(34%)
Absent	24(69%)	11(31%)
Diabetes Mellitus		
Present	6(67%)	3(33%)
Absent	69(67%)	34(33%)
Hypertension		
Present	11(78.5%)	3(21.5%)
Absent	64(65%)	34(35%)

The Prevalence of Musculo-Skeletal Disorders was increasing with increasing age i.e. 63% in <30yrs, 70% in 31-40 yrs, 78% in 41-50 yrs except 50% in above 50yrs age group. The distribution of Musculo-Skeletal Disorders was more in females 86% than males 58% and this difference was statistically significant (Pearson Chi-Square value is 8.09 with degrees of freedom 1 and $P < 0.004$). The Prevalence of Musculo-Skeletal Disorders was increasing with increasing Job Experience i.e. 65% in ≤10yrs, 67% in 11-20 yrs, and 73% in above 20yrs age group. The Prevalence of Musculo-Skeletal Disorders according Body mass index was 75% in overweight and obese individuals and 60%in individuals with normal Body mass index. The Musculo-Skeletal Disorders were more in those who do not have physical activity (69%) than those who have physical activity (66%). The Musculo-Skeletal Disorders were equal in both who have Diabetes Mellitus (67%) than those who do not have Diabetes Mellitus (67%). The Musculo-Skeletal Disorders were more in those who have Hypertension (79%) than those who do not have Hypertension (65%)

Discussion

The Prevalence of Musculo-Skeletal Disorders among study population was 67%. In a study conducted by Demissie B, etal. 245 (58.8%) of computer-user bankers were suffered work-related musculoskeletal disorders in the previous 12 months[10]. Srilatha et al., in their study found that the Prevalence of self-reported WMSD of the wrist and hand was 58%[11]. In a study by Shrivastava SR et al the Prevalence of Musculo-Skeletal Disorders was found to be 63% which was similar to our study[8].

The study population presented with various types of Musculo-Skeletal Disorders. The most common type was Neck pain (42.9%), Lower back pain (42%) followed by shoulder pain (34.8%), wrist pain (21.4%), Upper back pain (13.4%), Hand pain (12.5%) and elbow pain (8.9%). The findings in a study conducted by Gosain L etal were similar to our study the neck pain (60.3%), lower back pain (59.5%), and shoulder pain (49.6%) were the most reported body. regions affected by work-related MSD. The elbow (18.2%), wrist/hand (35.5%), upper back (42.1%), hips (24.8%), knee (23.1%), and ankle/feet (14%) were the least affected regions[12]. The study conducted by Demissie B, etal. revealed that neck (45.3%), lower back (38.9%), and upper back (32.9%) were the most affected body parts in the previous 12 months[10].

The Prevalence of Musculo-Skeletal Disorders was increasing with increasing age i.e. 63% in <30yrs, 70% in 31-40 yrs, 78% in 41-50 yrs but 50% in above 50yrs age group. In Demissie B, etal study WMSDs were significantly associated with age greater than 30. As a result, participants aged 30 and above were 6.5 times higher risk of WMSDs than those under 30 in the previous 12 months[10].

The distribution of Musculo-Skeletal Disorders was more in females 86% than males 58% and this difference was statistically significant (Pearson Chi-Square value is 8.09 with degrees of freedom 1 and $P < 0.004$). In a study conducted by Gosain et al the female participants were more prone to musculoskeletal pain as compared to males[12]. In Srilatha et al. study, Women were more to report symptoms than men (69% vs. 53%)[11].

The Prevalence of Musculo-Skeletal Disorders according Body mass index was 75% in overweight and obese individuals and 60%in individuals with normal Body mass index. The Musculo-Skeletal Disorders were more in those who do not have physical activity (69%) than those who have physical activity (66%). The Musculo-Skeletal Disorders were equal in both who have Diabetes Mellitus (67%) than those who do not have Diabetes Mellitus (67%). The Musculo-Skeletal Disorders were more in those who have Hypertension (79%) than those who do not have Hypertension (65%).

Conclusion

The Prevalence of Musculo-Skeletal Disorders among study population was 67%. The most common type was Neck pain (42.9%), Lower back pain (42%) followed by Shoulder pain (34.8%), Wrist pain (21.4%), Upper back pain (13.4%), Hand pain (12.5%) and Elbow pain (8.9%). Pain and Cramps were more common symptoms among the study population. The Prevalence of Musculo-Skeletal Disorders was increasing with increasing age except in above 50yrs age group. The distribution of Musculo-Skeletal Disorders was more among females than males. The Prevalence of Musculo-Skeletal Disorders was increasing with increasing Job Experience, more in over weight and Obese individuals. The Musculo-Skeletal Disorders are more in those who do not have physical activity (69%) and those who have Hypertension (78.5%). Awareness regarding Ergonomics among study population was 48.2%. 21.4% of study population received orientation on ergonomics. 33.9% were provided with ergonomic desk and chair. 24.9% of the study population take breaks during working hours.

Recommendations

Implementation of Ergonomics at work station will reduce the occurrence of Work related Musculo-Skeletal Disorders. Ergonomic Table and Chair are highly recommended. Special awareness programmes on Ergonomics to be conducted. Regular breaks in between computer work is highly recommended. Doing some stretching exercises are suggested to reduce work related musculoskeletal disorders.

Limitations of the study

Due to time constraints complete evaluation of the employees was not done. Sampling was convenience sampling. Subjective bias may be encountered with difference in evaluation by study population.

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