Effect of time related parameters on predisposition of musculoskeletal pain among Indian Information technology professionals

Mathankumar MOHANDOSS, Deepak SHARAN, Jerrish A JOSE,
Rameshkumar RANGANATHAN, Joshua Samuel RAJKUMAR

RECOUP Neuromusculoskeletal Rehabilitation Centre, Bangalore, India.

Abstract. Introduction: Work Related Musculoskeletal Disorders (WRMSD) are common in computer users. The aim of this study was to evaluate the role of time related parameters like work experience, duration of computer usage and the periodicity and duration of rest breaks in the predisposition of musculoskeletal pain among Information Technology (IT) professionals. Methodology: Ergonomic workplace analysis reports of 5357 IT professionals from various IT companies in India were reviewed. All the temporal parameters were correlated statistically with perceived pain and discomfort, region of pain and common clinical diagnosis of musculoskeletal disorder. Results: Majority of the respondents were male (71.4%). 2.5% of the workers used the computer for less than 8 hours in a day, 95.8% used it for 8 to 12 hours and remaining used it for more than 12 hours. Prevalence was more among workers who worked more than 8 hours. Neck, low back and wrist were the commonest regions affected respectively.

Keywords. Information Technology, WRMSD, ergonomics, temporal parameters

1. Introduction

Work related musculoskeletal disorders (WRMSD), constitutes a spectrum of musculoskeletal disorders that are acquired by the individual in which the work they perform. This is an evolving area of concern worldwide as more than 30 percent of the musculoskeletal disorders are by WRMSD. Work Related Musculoskeletal Disorders (WRMSD) are common in computer users especially the information technology (IT) industry. Approximately, 76% of computer professionals from India reported musculoskeletal discomfort in various epidemiological studies (Talwar et al., 2009, Bhanderi et al., 2007, Sharma et al., 2006). The nature of work, which the individual performs in IT, forms the basis of acquiring WRMSD. Ergonomic Risk factors (i.e. lack of breaks, static loading) and psychosocial risk factors (i.e. stress) are considered to be the commonest risk factors for WRMSD among IT Professionals. India has been forefront in the IT sector with about 2,236,614 professional working in it (NASSCOM Fact sheet, 2009). As a proportion of the National GDP, the IT sector revenues have grown from 1.2% in 1998 to an estimated 7.5% in 2012 (NASSCOM Strategic Review, 2012). From these information, it can be seen that the number of professionals using computers in the IT industry is increasing and also it adds to the increase in productivity levels also. This increase in computer usage would thereby have an increase in exposure to computer related risk factors. These IT professional as they spend their duty time in front of the computers, are particularly susceptible to the development of musculoskeletal symptoms, with prevalence as high as 50% (Gerr and Marcus, 2002). So, considering the above factors, a need arises to evaluate the role of time related parameters like work experience, duration of

computer usage and the periodicity and duration of rest breaks in the predisposition of musculoskeletal pain among Information Technology (IT) professionals.

2. Methods

The study was approved by the RECOUP Institutional Review Board. Permission was obtained from the IT companies along with the Informed consent from the participants. Ergonomic workplace analysis reports of 5357 IT professionals from various IT companies in India were reviewed. The report consisted of demographic data, time related parameters like total years of work, duration of work in a day etc and workstation information and Nordic pain questionnaire. All the temporal parameters were correlated statistically with perceived pain and discomfort, region of pain and common clinical diagnosis of musculoskeletal disorder. Data were collected and statistical analysis was made.

3. Results & Disscusion

Among the 5357 employees, majority of the respondents were male (71.4%). And only 2.5% of the employees used the computer for less than 8 hours in a day, when compared to 95.8% used of the employees who used it for 8 to 12 hours and remaining 1.7% of the employees used it for more than 12 hours. The findings in our study was more when compared to previous studies that reported only 70% of the subjects worked for more than 6 hours per day (Talwar R et al., 2009). Prevalence of musculoskeletal pain was more among workers who worked more for than 8 hours. The prevalence rate in our study was higher compared to previous studies by Hsu and Wang, 2003 and Ming et al., 2004 that reported 20% to over 75%. Neck (54%), low back (44%) and wrist (38%) were the commonest regions affected respectively, which was also in accordance with the previous studies that reported Neck, shoulder, back and wrist were the common areas affected. However these findings were higher compared to previous study by Vijay A., 2013, that reported percentages of affected areas being Neck (44%), low back (30.5%) and wrist (19%). In all the body regions, the percentage of pain increased with increased duration of working hours per day. Negative correlation was noted between frequency, duration of break and perceived pain, which states that decreased frequency and duration of breaks in between the work caused increase in the perception of pain. This increase in the musculoskeletal abnormalities as with increase in the working hours was also supportive of the previous studies by Sharma AK et al., 2006, Talwar R et al., 2009 and Gerr et al., 2002. Positive correlation was noted between duration of computer usage in a day and perceived pain, which states that as the duration of computer usage increases, the perceived pain level also increases. Regarding the use of laptop result from our study also showed a positive correlation with the increased use of laptop by the users with increased reporting of perceived pain. This finding was also supported by previous studies on laptop usage on musculoskeletal problems by Gustafsson E et al., 2009 and Charness N et al., 2010.

4. Conclusion

The study results revealed that exacerbation of WRMSD was directly related to duration of computer usage in a day. Increasing the frequency and duration of breaks while working on the computer is an important strategy to prevent WRMSD, in addition to addressing other ergonomic and psychosocial risk factors.