Relationship between Musculoskeletal Discomfort and Workstyle Risk Factors among Information Technology Professionals in India

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Introduction

- Prevalence of work-related musculoskeletal disorders (WRMSD) is common in Information Technology (IT) professionals throughout the world.

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- Based on psychosocial, physiological, and behavioral response that occurs in an individual during high work demands, Feuerstein and colleagues defined the concept of "Workstyle"[1].
- Workstyle has been identified as a mediating factor in the relation between job demands and musculoskeletal discomfort of the upper extremity[2].

(Feuerstein, 1996)[1] (Feuerstein, Carosella, Burrell, Marshall, & Decaro, 1997; Gerr et al., 2002)[2]

Objective

- This study was aimed to find out the relationship of work related musculoskeletal disorders and work-style risk factors among IT professionals.

Review of literature

- Approximately 76% of computer professionals from India reported symptoms of musculoskeletal discomfort in various epidemiological studies including pain in neck, back, wrists and shoulder.

(Bakhtiar & Vijaya, 2003; Sharma, Khera, & Khandekar, 2006; Talwar, Kapoor, Puri, Bansal, & Singh, 2009).

Risk factors

- Various factors such as poor office ergonomics, working long hours and static postures were identified as risk factors leading to the pain and discomfort.

(Bakhtiar & Vijaya, 2003; Sharma, et al., 2006; Talwar, et al., 2009)

Psychosocial risk factors

- National Institute of Occupational Health and Safety (NIOSH) has identified five psychosocial factors related to musculoskeletal disorders, i.e., job satisfaction, intensified workload, monotonous work, job control, and social support.

(Bernard, 1997)=

Psychosocial risk factors

- Recently, strong associations between boredom, workload, and social support to musculoskeletal discomfort in computer professionals from India were reported.

(Bhanderi, Choudhary, Parmar, & Doshi, 2007)

Risk factors

- Although WRMSDs have been shown to result primarily from biomechanical stressors such as forceful exertions, static postures and repetition[1].
- there is an increasing evidence that psychosocial work factors may trigger or worsen WRMSDs[2].

Methodology

- Participants: The data presented in this study was extracted from various IT professionals who were a part of Ergonomic workplace evaluation organized by their company.
- N = 4512

Procedure

The methods was as follows:

1. Demographics (age, gender etc.)
2. Workstation information
3. Working posture information (i.e., head and neck in line with torso, forearm, wrist and hand in line)
4. Perceived pain and discomfort
5. Workstyle questionnaire developed by Feuerstein

Procedure

- Based on technology used, participants were divided into desktop or laptop users.
- Duration of computer use per day was also recorded.

Outcome Measures

- The adverse workstyle in the participants was assessed using the score from the 32 item workstyle questionnaire[1].
- The questionnaire consists of 8 subscales (i.e. working through pain, social reactivity, limited workplace support, breaks, deadlines and pressure, self-imposed workload, mood, and autonomic)

(Feuerstein & Nicholas, 2006)

Data Analysis

- Workstyle scores were individually calculated using formula mentioned in literature
- Correlation coefficient computed using inferential statistics
- Statistical analyses were conducted using the SPSS 17.0 package with a significance level set at $p < 0.05$ for all tests.

Demography

Average age	29.9 ± 10.2 years
Gender	76 % males and 24% females

Demography

Category	Percentage (%)
Duration of computer use per day	
< 4 hrs.	1
4 - 6 hrs.	9
7 -9 hrs.	46
> 9 hrs.	45
Technology used	
Desktop	75
Laptop	25

Results

- The short form workstyle questionnaire score analysis indicated 22% of overall participants were at a high risk (score ≥ 28) of adverse workstyle.
- 63% of participants reported pain and discomfort during or shortly after they finish work on the computer.
- 34% of participants experienced numbness/tingling sensation in their fingers after working on the computer

Results

- Loss of strength in hands was reported by 33% of participants
- 13% of participants indicated a loss in productivity due to the symptoms of pain and discomfort
- Less than 1% of participants indicated that days were taken off work due to the pain symptoms.

Correlation Analyses

- Correlation analyses revealed that pain was significantly correlated with the total:
  1. Workstyle score (r = 0.39, p = 0.05),
  2. Daily computer usage (r = 0.46, p = 0.004)
  3. Micro break (r = 0.87, p = 0.001)
  4. Productivity (r = 0.95, p = 0.001)

Discussion

- Participants with a high pain and workstyle score would indicate “days off work” due to the symptoms, the results indicated low incidence.

Discussion

- Certain limitations exist in the present study.
- Firstly, the data was randomly selected from previous database and therefore there was no control over the experimental design.
- Secondly, factors such as work injury claims, existing medical condition/trauma, and ergonomic risk factors (posture at work, use of mouse trays etc.) were not available from the previous dataset.

Conclusion

- This study show significant associations between psychosocial factors such as workstyle and the presence of musculoskeletal pain.
- Based on the findings of this study, it is recommended that psychosocial factors should be incorporated in designing intervention strategies to reduce work-related musculoskeletal symptoms.

Thank you

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