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Psychosocial and work organization risk factors for cumulative trauma disorders in the hands and wrists of newspaper employees

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The introduction of the video display terminal (VDT) into the newspaper office environment has transformed newsrooms throughout the United States. Electronic news data bases, immediate transference of information, computerized copy editing, electronic monitoring, and shuffled deadlines (all the result of VDT networking) have altered the organization of work practices for the entire office news staff, from receptionists to reporters. Along with these changes, added dimensions of work stress and psychological demands have surfaced and, concurrently, a dramatic rise in health complaints from news personnel has occurred (1). Upper extremity musculoskeletal disorders, or cumulative trauma disorders, top the list.

Several studies of office personnel have related relatively high levels of worker stress to cumulative trauma disorders in the upper extremity (2—6). Such factors as lack of control over many aspects of the job, increased isolation, reduction of task diversity, and increased work load have been attributed to the introduction of the VDT into the workplace and to the increase in reports of cumulative trauma disorders (7, 8).

In the present study, we were interested in identifying important work organization and psychosocial risk factors for cumulative trauma disorders of the hand and wrist among news personnel and also the relationship of cumulative trauma disorders to more established risk factors, such as biomechanical stressors and specific job tasks. In December 1989 the National Institute for Occupational Safety and Health (NIOSH) received a health hazard evaluation request from a large metropolitan newspaper for assistance in evaluating cumulative trauma disorders among employees. This report focuses on findings and psychosocial risk factors related to such disorders of the hand and wrist.

Methods

Selection criteria. Initial site visits were conducted in the two facilities in December 1990 and March 1991. They included walk-through tours to identify departments representing a wide range of computer keyboard use, job tasks, and psychosocial and work organization factors, such as decision-making authority, task variety, social support, and personal freedom on the job. Employees from four departments were randomly selected for study. Three of the departments consisted mainly of clerical and data-entry VDT operators (circulation, classified, and finance departments), and one department consisted of newspaper professionals using the VDT (editorial department). Nine hundred and seventy-one employees completed the questionnaire in July and August 1991.

Questionnaire. Each participant completed a self-administered questionnaire which was reviewed by NIOSH personnel for completeness and accuracy and elicited information on (i) demographics, (ii) work history, (iii) job tasks performed, (iv) workstation design and equipment used, and (v) work organization and psychosocial scales (consisting of questions related to job satisfaction, job demands, work load demands, job control, worker isolation, job security, hostility from clients, and social support from immediate supervisor, friends, relatives and co-workers), and (vi) musculoskeletal discomfort in the upper extremities. The musculoskeletal data in the questionnaire included the frequency, duration, and intensity of discomfort in the upper extremities, neck, and back.

Criteria for a cumulative trauma disorder of the hand or wrist. A work-related cumulative trauma disorder satisfied the following criteria: (i) symptoms (pain, numbness, tingling, aching, stiffness, or burning) in either wrist or hand, (ii) no previous accident or sudden injury, (iii) symptoms that began after the start of the current job, (iv) symptoms that lasted for more

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than one week or occurred at least once a month within the past year, and (v) symptoms that were reported as "moderate" to "worst pain ever in life" on a severity scale.

Statistical analyses. Univariate analyses of the data were conducted to determine the association of the work variables with the prevalence of cumulative trauma disorder. Student t-tests were performed to determine whether the cases and noncases could be differentiated in terms of scores on scales for psychosocial and work organization variables. Multivariate analysis using unconditional logistic regression was then used to examine the independent effects of these variables while other factors (ie, potential confounders) analyzed simultaneously in the model were controlled for.

Results

Although the univariate analyses revealed many significant associations between work organization and psychosocial variables and cumulative trauma disorders of the wrist and hand, the importance of these variables was diminished somewhat in the final logistic regression model where several job task and demographic variables emerged as important predictors of these disorders. The work organization and psychosocial variables which remained significant in the final model included the social support variables and job variance. When analyses were performed within departments, the work organization and psychosocial variables were found to be better predictors of cumulative trauma disorders of the hand and wrist in those departments with a large number of clerical and data-entry VDT operators. In the editorial department, no work organization or psychosocial variable remained significant in the model predicting such disorders.

Discussion

In the overall logistic regression model, which included all of the departments, the psychosocial factors were less powerful predictors of cumulative trauma disorders than the job task and demographic variables. However, department-wise analyses showed that, in departments with a higher concentration of clerical and data entry VDT operators, psychosocial factors were more important predictors of cumulative trauma disorders of the hand and wrist. In contrast, there were no psychosocial predictors in the regression model of the editorial department, which represented those jobs with high decision latitude and varied job tasks.

To investigate the basis for this discrepancy, we examined the ratings the VDT users gave to the work organization and psychosocial factors across departments. The results showed consistently more favorable conditions in the editorial department (although work load demands remained high) than in departments dominated by more clerical tasks (ie, classified). These results suggested that the reduced salience of work organization and psychosocial factors as disease predictors among editors may be due to reduced exposures to stressful levels of these factors among editors.

These findings suggest that psychosocial and work organization factors need to be considered in programs to prevent cumulative trauma disorders; programs restricted to the physical environment are not likely to be fully effective. This situation may be especially true for jobs dominated by clerical tasks. However, these conclusions are limited by the methodological weaknesses of the cross-sectional design, which called for the concurrent measurement of risk factors and health outcomes. It is impossible to rule out alternative explanations; those who experience symptoms of cumulative trauma disorders may recount excess psychosocial problems at work. Further investigations using prospective approaches are warranted.

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