

## **PREDICTORS OF UPPER EXTREMITY SYMPTOMS AND FUNCTIONAL IMPAIRMENT AMONG WORKERS EMPLOYED FOR 6 MONTHS IN A NEW JOB**

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This study was supported by CDC/NIOSH grant # R01OH008017-01.

### **Aim**

To identify independent predictors of upper extremity symptoms and related functional impairment among workers employed for 6 months in a new job. Potential predictive variables include demographic information, psychosocial factors, and physical work exposures.

### **Methods**

This study presents preliminary analyses of data from a prospective cohort of 1100 newly hired workers from several industries. Baseline data collection included median and ulnar nerve conduction testing, physical examination, and a self-administered questionnaire that was repeated at 6 month follow-up. Questionnaire data included symptoms, psychosocial factors, personal risk factors, and work physical exposures assessed using a modified Nordstrom scale. The predictor variables were age, gender, race, body mass index, physical work exposure, and job control, job insecurity, and job support from the Karasek scales. Physical work exposures from the Nordstrom scales included in data analyses were bending of the hand and wrist, use of hand-held vibrating power tools, forceful gripping, and lifting >2lbs. Univariate analyses were performed between the covariates and each outcome of interest. Multivariate logistic regression was performed to create several predictive models for each outcome variable.

### **Results**

At the time of analysis, 728 subjects had completed 6-month follow-up. Mean age was 30.2 years; 67% were male. Statistical models examined three separate outcome variables: prevalent UE symptoms (subjects reporting symptoms at 6-month follow-up, regardless of baseline status), incident symptoms (subjects with no symptoms at baseline who reported symptoms at 6-months), and functional impairments related to UE symptoms (defined as decreased work productivity, limited ability to work, missed days of work, job restrictions, or job change). Criteria for prevalent and incident symptoms reported in the UE included, "recurring or repeated symptoms more than 3 times or lasting more than ONE week."

Independent predictors for **prevalent UE symptoms** were age (O.R.=1.20 per ten year increment, 95% C.I.=1.01-1.42), non-Caucasian race (O.R.=2.31, 95% C.I.=1.55-3.44), male gender (O.R.=0.45, 95% C.I.=0.29-0.69), job tasks involving wrist bending (O.R.=1.14, 95% C.I.=1.03-1.25) and job tasks involving forceful gripping (O.R.=1.14, 95% C.I.=1.04-1.24).

Independent predictors for **incident UE symptoms** were age (O.R.=1.26 per ten year increment, 95% C.I.=1.01-1.54), non-Caucasian race (O.R.=1.83, 95% C.I.=1.12-2.98), male gender (O.R.=0.51, 95% C.I.=0.30-0.85), and job tasks involving forceful gripping (O.R.=1.16, 95% C.I.=1.04-1.29).

Independent predictors for **functional impairment** were job support (O.R.=0.94, 95% C.I.=0.88-0.98) and job tasks involving wrist bending (O.R.=1.19, 95% C.I.=1.04-1.37).

### **Conclusions**

Analyses of our preliminary data showed independent job related risk factors for UE symptoms and related functional impairment. As expected, increasing age was associated with increased risk of UE symptoms, although age was not an independent predictor of functional impairment due to symptoms. Male gender was protective for UE symptoms, while non-Caucasian race was associated with increased prevalence and incidence of UE symptoms. Workers reporting more forceful gripping and wrist bending were at higher risk for UE symptoms; wrist bending also predicted functional impairment. Interestingly, job-related psychosocial variables were not associated with reported UE symptoms, but higher job support from coworkers and supervisors was associated with a lower risk of work-related functional impairment.