EFFECTS ON PRESENTEEISM OWING TO FEAR-AVOIDANCE BELIEFS OF WORKERS WITH MUSCULOSKELETAL PAIN: A ONE-YEAR COHORT STUDY

1K Ikegami*, 2H Sugano, 3S Michi, 1H Ando, 1-2H Nozawa, 3T Shirasaka, 4M Kondo, 5H Imoto, 6H Shima, 7Y Kawatsuki, 2A Ogami. 1Institute of Industrial Ecological Sciences, University of Occupational and Environmental Health, Japan; 2-3Stanley Electric Co., Ltd Hadano Factory; 4Kyushu Labour Bank; 5Feikado Co., Ltd

Introduction Previous studies have reported on the relationship between workers’ presenteeism, specifically where a loss of work productivity results from an employee’s health problems, and musculoskeletal pain (MSP). Other studies have reported that chronicity and an increase in lower back pain were brought on by individual fear-avoidance beliefs. We considered that workers’ fear-avoidance beliefs linked with MSP cause chronic MSP and exacerbate their presenteeism. The aim of this study was to clarify the effects of presenteeism arising from fear-avoidance beliefs among workers with MSP.

Methods We conducted a prospective study issuing self-administered questionnaires to 3406 workers in 118 companies, from June 2016 to February 2017. We distributed questionnaires on two occasions and obtained responses from 1673 individuals (response rate: 49.1%). In total, 1490 individuals were eligible for this survey (effective response rate: 89.1%). We excluded individuals whose pain status responses were not clear. We sought information from participants about various individual and work-related characteristics and the prevalence of MSP using an original questionnaire. The Work Functioning Impairment Scale (Wfun) was used to measure presenteeism, and the Tampa Scale for Kinesiophobia (TSK) was used to measure fear-avoidance beliefs. We statistically analysed the change in the Wfun and the TSK scores among groups with: no prevalence of MSP; transitional MSP (in two groups, with participants either developing or recovering from MSP), and; chronic MSP.

Results The Wfun score in the chronic MSP group was significantly higher than that of the other groups for both survey measures. The TSK score of the chronic MSP group was also significantly higher than for the transitional MSP groups. We observed a significant positive correlation between the change of Wfun score and TSK score.

Conclusion Our study suggests that fear-avoidance beliefs of workers with MSP leads to MSP chronicity, and exacerbates worker presenteeism.

ESTIMATING AND INTERPRETING EFFECTS FROM NONLINEAR EXPOSURE-RESPONSE CURVES IN OCCUPATIONAL COHORTS USING TRUNCATED POWER BASIS EXPANSIONS AND PENALISED SPLINES

Elizabeth J Malloy*, Jay M Kapellusch, Arun Garg. 1American University, Washington, U. S.A; 2University of Wisconsin-Milwaukee, Milwaukee, U.S.A

Introduction The Cox proportional hazards model is frequently used to model survival or time-to-event data. In occupational settings it is common to have an occupational exposure as one of the explanatory variables in the model and the association between the outcome and this exposure is of interest. Interpretation of nonlinear exposure-response relationships is useful in epidemiological risk assessment and methods for modelling nonlinearities are needed in those situations when a linear exposure-response is not expected or when one desires to formally assess a nonlinear association.

Methods Truncated power basis expansions and penalised spline methods are demonstrated for estimating nonlinear exposure-response relationships. Interpretation of the nonlinear estimates are given. Methods are illustrated on a simulated data set under a known exposure-response relationship and in a data application examining the association between risk of carpal tunnel syndrome and job physical exposure as measured by the Strain Index in an occupational cohort.

Discussion Regression modelling often focuses on interpreting coefficient estimates. When exposure-response relationships are nonlinear and a nonparametric or smoothing method is used to estimate the relationship, the resulting regression coefficients are not individually interpretable. But, these methods do provide effect size estimates which are interpretable – estimates at specific exposures of interest. The methods can be coded directly in R, using readily available example R code as a guide.