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The CONSTANCES job exposure matrix based on self-reported exposure to physical risk factors: development and evaluation

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ABSTRACT

OBJECTIVES - Job exposure matrices (JEMs) can be constructed from expert-rated assessments, direct measurement and self-reports. This paper describes the construction of a general population JEM based on self-reported physical exposures, its ability to create homogeneous exposure groups (HEG) and the use of different exposure metrics to express job-level estimates. **METHODS** - The JEM was constructed from physical exposure data obtained from the Cohorte des consultants des Centres d'exams de santé (CONSTANCES). Using data from 35 526 eligible participants, the JEM consisted of 27 physical risk factors from 407 job codes. We determined whether the JEM created HEG by performing non-parametric multivariate analysis of variance (NPMANOVA). We compared three exposure metrics (mean, bias-corrected mean, median) by calculating within-job and between-job variances, and by residual plots between each metric and individual reported exposure. **RESULTS** - NPMANOVA showed significantly higher between-job than within-job variance among the 27 risk factors ($F(253,21964)=61.33$, $p<0.0001$, $r^2=41.1\%$). The bias-corrected mean produced more favourable HEG as we observed higher between-job variance and more explained variance than either means or medians. When compared with individual reported exposures, the bias-corrected mean led to near-zero mean differences and lower variance than other exposure metrics. **CONCLUSIONS** - CONSTANCES JEM using self-reported data yielded HEGs, and can thus classify individual participants based on job title. The bias-corrected mean metric may better reflect the shape of the underlying exposure distribution. This JEM opens new possibilities for using unbiased exposure estimates to study the effects of workplace physical exposures on a variety of health conditions within a large general population study.

KEYWORDS: -

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