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RESEARCH ARTICLE

Job Strain and Cardiovascular Disease Risk Factors: Meta-Analysis of Individual-Participant Data from 47,000 Men and Women

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Conclusions about Job Strain and Blood Pressure Findings Misleading.

Posted by mdobson on 30 Sep 2013 at 19:14 GMT

We believe Nyberg et al are incorrect in concluding that their findings “provide strong evidence against the common belief that job strain increases resting blood pressure” [1]. Although the IPD-Consortium meta-analysis involves a large population and therefore has great power to detect small changes between groups, the cross-sectional design of the component studies used in this analysis, and its focus on resting/casual blood pressure (CBP) make it less than ideal for the study of the long term impact of job strain on blood pressure (BP).

They cite only three cross-sectional studies [2-4] to support their conclusion of an absence of a relationship between job strain and CBP or hypertension. However, on a quick review of the literature on job strain (measured by the standard JCQ or JCQ-like questionnaire scales as in the IPD Work paper) and CBP (measured in a clinic as in the IPD Work paper), we found 31 cross-sectional studies and 5 longitudinal studies. Among the 31 cross-sectional studies, a number showed positive relationships between job strain and casual blood pressure, including [5-9]. Of the 5 longitudinal studies, there were 4 that examined job strain and CBP [10-13], 1 looked at job strain and hypertension only [14] and 1 that examined both CBP and hypertension [12]. An association between job strain and systolic blood pressure was supported in 3 out of 4

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longitudinal studies in gender-mixed or male working populations [10-12]. The association between job strain and hypertension was confirmed in one study[12], but not in the other study [14]. However, the first study, showing a positive association between job strain (as a ratio of job demand to job control) and hypertension was methodologically superior to the other study showing a null association. In this paper, job strain was measured twice, those who were hypertensive at baseline were excluded, and job strain was operationalized in several forms, including a change in job strain ratio between baseline and follow-up. We conclude that the existing literature supports a finding of a cross-sectional and longitudinal association between job strain and CBP at least in men. Although inconclusive as yet, the literature partially supports the longitudinal association between job strain and hypertension, particularly when repeated job strain information is used as a continuous variable.

Of course, it is well established that ABP is a better predictor than CBP of target organ damage [15, 16] and incident cardiovascular disease [17, 18] and is associated with job strain. Nyberg et al acknowledge that their job strain and CBP findings are not “universal” and “do not apply to ambulatory blood pressure,” citing our recently published meta-analysis that demonstrates a substantial and significant association between job strain and ambulatory blood pressure in cross-sectional studies as well as in 3 longitudinal studies [19].

While not yet absolutely conclusive, the literature on job strain and CBP and ABP suggest there exists a positive relationship between this work stressor (one of many at the worksite) and blood pressure/hypertension, and that the results are not dissimilar for CBP and ABP. Given the large body of positive research findings on job strain and BP as well as the importance of the IPD consortium findings we believe the authors should have paid more attention to the existing literature on the longitudinal association between job strain and CBP, ambulatory blood pressure, and hypertension before drawing their strong conclusions.

More longitudinal research, and most importantly intervention studies, on job strain and casual or ambulatory blood pressure are necessary. An ideal epidemiological study of work stressors and blood pressure would involve, given the observed slow increase over time in blood pressure in the general population of less than 0.5-1mmHg/yr [20], at least 5 and perhaps 10 years of follow-up and would include repeated measures of exposure to work stressors at baseline and follow-up (including job strain) as well as repeated measures of blood pressure, preferably ambulatory.

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No competing interests declared.

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