



Letter to the Editor

RE: "JOB STRAIN AND THE CORTISOL DIURNAL CYCLE IN MESA: ACCOUNTING FOR BETWEEN- AND WITHIN-DAY VARIABILITY"

Rudolph et al. (1) examined the association between job strain and cortisol profile in a sample of 341 participants. Several potential confounders were considered, including sociodemographic characteristics, income-wealth index, financial strain, physical health, physical activity, and medication use. The authors found that, compared with "less job strain," "more job strain" was associated with lower salivary cortisol levels throughout the day. No relationship between job strain and the cortisol awakening response was observed. We have 4 comments on the methods used in the study. We believe these comments can help enhance future research on the association between job strain and cortisol levels.

First, although the authors related the modifications in cortisol profiles to job strain, they did not assess and statistically control for a number of nonoccupational strain factors (e.g., family- or couple-related chronic stress). Most probably, the inclusion of these factors would have offered a different picture of the variance in cortisol profile specifically explained by job strain.

Second, depressive symptoms and disorders were not considered in the study. Depression is known to be associated with altered functioning of the hypothalamic-pituitary-adrenal axis and changes in cortisol profiles (2, 3). For instance, depression with atypical features (4) has been associated with hypocortisolism (5, 6). Moreover, depression has been shown to be associated with job strain (7). Thus, the omission of depression is problematic. Relatedly, the inclusion of dispositional variables such as neuroticism (the propensity to experience negative emotions) would have been helpful. Neuroticism has also been connected with both job strain (8) and an altered cortisol response (9).

Third, the split criterion used by Rudolph et al. (1) to dichotomize job demands and job control into high and low categories (and then distinguish between participants with less and more job strain) lacks a clear theoretical and/or clinical underpinning. An alternative strategy would have been to rely on a demands-to-control ratio that would have allowed dimensional analyses to be utilized; relying on a ratio is recommended, for instance, when using the effort-reward imbalance model of job strain (10). In the study by Rudolph et al. (1), modeling job strain as a continuous variable would have minimized information loss (11) and neutralized the issues linked to the dichotomization criteria.

Fourth, job demands and job control could have also been examined separately, given that the 2 factors have often been found to produce independent effects, for example in studies of cardiovascular disease (12–14). The split criterion results in the "less job strain" group encompassing individuals with 1) high demands and high control, 2) low demands and high control, and 3) low demands and low control. It may be that either demands or control is related to cortisol profile but not

both. Furthermore, the number of participants involved in the propensity score analysis was reduced from 341 to 254 because, as shown in Web Figure 2A of their original article (1), it was difficult to find matches for 87 individuals. In other words, matches could not be found for more than 25% of the sample. We suspect that if the propensity score analyses were run separately for different levels of demands and different levels of control, a greater number of matches would be identified, allowing us to get a closer look at the relation of demands and control to cortisol profile.

In conclusion, we salute the authors' work but call for the consideration of the aforementioned points in future research. Taking these points into account would in our view contribute to offering a clearer view of the relationships of job strain and each of its components with cortisol variation.

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