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Associations of job strain and working overtime with adverse health behaviors and obesity: Evidence from the Whitehall II Study, Helsinki Health Study, and the Japanese Civil Servants Study

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Abstract

Adverse health behaviors and obesity are key determinants of major chronic diseases. Evidence on work-related determinants of these behavioral risk factors is inconclusive, and comparative studies are especially lacking. We aimed to examine the associations between job strain, working overtime, adverse health behaviors, and obesity among 45–60-year-old white-collar employees of the Whitehall II Study from London ($n = 3397$), Helsinki Health Study ($n = 6070$), and the Japanese Civil Servants Study ($n = 2213$). Comparable data from all three cohorts were pooled, and logistic regression analysis was used, stratified by cohort and sex. Models were adjusted for age, occupational class, and marital status. Outcomes were unhealthy food habits, physical inactivity, heavy drinking, smoking, and obesity.

In London, men reporting passive work were more likely to be physically inactive. A similar association was repeated among women in Helsinki. Additionally, high job strain was associated with physical inactivity among men in London and women in Helsinki. In London, women reporting passive work were less likely to be heavy drinkers and smokers. In Japan, men working overtime reported less smoking, whereas those with high job strain were more likely to smoke. Among men in Helsinki the association between working overtime and non-smoking was also suggested, but it reached statistical significance in the age-adjusted model only. Obesity was associated with working overtime among women in London. In conclusion, job strain and

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working overtime had some, albeit mostly weak and inconsistent, associations with adverse health behaviors and obesity in these middle-aged white-collar employee cohorts from Britain, Finland, and Japan.

Keywords: Psychosocial; Unhealthy food habits; Physical inactivity; Heavy drinking; Current smoking; International comparisons; UK; Finland; Japan; Work

Introduction

Psychosocial job strain (Karasek, 1979) has been shown to be a major, independent cardiovascular risk factor (Belkic, Landsbergis, Schnall, & Baker, 2004). Health behaviors are also important determinants of these largely preventable chronic diseases (Ezzati, Henley, Thun, & Lopez, 2005; Hu et al., 2005). Working overtime is also related to health behaviors and health (Caruso, Hitchcock, Dick, Russo, & Schmit, 2004). However, associations of these working conditions with adverse health behaviors have not been thoroughly studied. Nevertheless, it has been suggested, that psychosocial factors including working conditions might shape health behaviors (Stansfeld & Marmot, 2002), and may partly explain inequalities in metabolic syndrome and cardiovascular disease by affecting employees' health behaviors (Chandola, Brunner, & Marmot, 2006; Marmot & Theorell, 1988). This highlights the importance of deepening our understanding of how working conditions might relate to adverse health behaviors and subsequent obesity. International comparisons provide a wider perspective to study these associations, while also seeking to identify similarities or dissimilarities across national contexts thereby showing more valid results.

A pathway between psychosocial working conditions and adverse health behaviors has been suggested as a response to environmental challenges such as high job strain and overtime work that may culminate in behavioral modification (Bhui, 2002). Accordingly, it can be hypothesized that employees compensate for high psychosocial job strain and working overtime with adverse behaviors. First, job strain may increase the consumption of fatty and sweet foods (Oliver, Wardle, & Gibson, 2000), while intake of fruits, vegetables, fish and meat may be reduced (Oliver & Wardle, 1999), at least among susceptible individuals (Oliver et al., 2000; Wardle, Steptoe, Oliver, & Lipsey, 2000). High job strain and overtime work are also potential barriers to physical activity (Schneider & Becker, 2005). Additionally, chronic job strain could increase heavy drinking, prevent smokers from quitting, or induce quitters to relapse. Since smoking is assumed to ease stress, smokers are likely to smoke more under psychosocially strenuous work (Parrott, 1999). However, as smoking is initiated usually already in young adulthood (Paavola, Vartiainen, & Haukkala, 2004), the relationship between psychosocial working conditions and current smoking is likely to rather reflect smoking intensity or maintenance of the harmful habit (Green & Johnson, 1990; Johansson, Johnson, & Hall, 1991). While strenuous work is hypothesized to increase drinking, heavy drinking may in turn affect both perceptions about psychosocial working conditions and the actual work (Cargiulo, 2007; Zins et al., 1999). Additionally, suggested behavioral modifications might predispose employees to subsequent obesity. These hypotheses need, however, further clarification and examination. As a large number of employed people are continuously exposed to psychosocially strenuous working conditions for a substantial part of their active time, it is important to examine whether this has detrimental effects on health behaviors and obesity across different countries and among both genders.

In line with these suppositions about assumed theoretical pathways, earlier research has shown that job strain and its dimensions, i.e., job demands and job control have some, albeit limited and inconclusive, associations with health behaviors and body mass index (Hellerstedt & Jeffery, 1997; Kouvonen, Kivimäki, Väänänen, et al., 2007). Most previous studies have focused only on smoking (Green & Johnson, 1990; Kouvonen, Kivimäki, Virtanen, Pentti, & Vahtera, 2005) or heavy drinking (Bobak et al., 2005; Kouvonen, Kivimäki, Cox, Poikolainen, et al., 2005; van Loon et al., 2004). Physical activity has also received some attention (Kouvonen, Kivimäki, Elovainio, et al., 2005), but studies about food habits are especially scarce (Kawakami et al., 2006). Working overtime may, in turn, influence employees' health by causing strain or changing health behaviors (Caruso et al., 2004). However, we lack evidence linking working arrangements with several health behaviors. Moreover, these previous results are based on non-comparative studies, with usually a limited number of working conditions and health behaviors. Instead, previous international comparisons have focused on different outcomes,