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EDITORIAL COMMENT

Occupational Risks of Recurrent Coronary Heart Disease*

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Despite regulatory efforts in many high-income countries, long working hours contribute significantly to the persistence of adverse working conditions on a global scale. According to a report from the International Labour Organization, the global prevalence of people working 48 h and more during a week amounts to some 36% (1). With the transformation of the modern work due to technological advances and economic globalization, an increase in work load and an extension of irregular, nonstandard forms of employment, including working from home, were reported (2,3), aggravating the control and prevention of long working hours. An impressive number of prospective epidemiological studies investigated health-adverse effects of long working hours. Although there is no consistency across different health outcomes, a rather robust body of evidence indicates small elevated relative risks of incident coronary heart disease (CHD) and stroke among people working ≥55 h/week compared with those working 35 to 40 h/week (4-6). These small elevations must be evaluated against the frequency of long working hours mentioned and the continued burden of cardiovascular disease among working-age populations (7). Extended working time often goes along with exposure to stressful material and psychosocial work environments. Specifically, jobs defined by high demand and low control ("job strain") and those defined by high effort and low reward were shown to increase the risk of incident CHD (8,9), as well as the risk of recurrent CHD (10,11).

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The paper by Trudel et al. (12) published in this issue of the *Journal* is the first to analyze associations of these 2 cardiovascular risk factors, long working hours and stressful work, as measured based on job strain, with risk of recurrent CHD in a large sample of patients with post-myocardial infarction who returned to work. This carefully designed longitudinal study demonstrates a substantially increased risk of recurrent CHD (hazard ratio: 1.67; 95% confidence interval: 1.10 to 2.53) among those working ≥55 h/week compared with those working 35 to 40 h/week during a mean observation period of 5.9 years. Moreover, job strain intensifies the effect of long working hours on CHD, such that their combined effect results in an increased hazard ratio of 2.55 (95% confidence interval: 1.30 to 4.98). Strengths of this investigation include valid outcome measures, inclusion of a broad range of confounding factors, a high participation rate during follow-up, and the application of advanced statistical modeling to estimate the effect of exposure time. Because the study sample comprising 967 persons was restricted to patients recruited from 30 Canadian hospitals who survived their first acute myocardial infarction, who were younger than 60 years, and who were economically active during the year before disease onset, the generalization of findings may be somehow limited, in particular because the number of women included in the study was small and because a potentially increased vulnerability of persons with low socioeconomic status could not be explored.

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The results of this study have several important implications for clinical practice, specifically for the provision of more comprehensive measures of secondary prevention to patients with CHD. First, as suggested by the authors of the Canadian study, applying a short standardized assessment of working time and stressful working conditions among economically active cardiac patients would enrich physicians' awareness of patients' needs and inform medical decision making (13). Along these lines, the Cardiac Rehabilitation Section of the European Association of Cardiovascular Prevention and Rehabilitation of the European Society of Cardiology has proposed a set of screening questions to identify potential stress risk factors, particularly work-related stressors, among these patient groups (14). Second, cardiac rehabilitation programs that routinely apply measures of improving a healthy lifestyle can be enriched by offering training skills of coping with stressful demands and of strengthening resilience and relaxation (15). Respective professionally guided programs were shown to improve health outcomes and to reduce additional psychosocial risk factors related to CHD, in particular, vital exhaustion, depression, and anxiety (16–18). Third, involvement of occupational health services would be crucial in developing return-to-work plans, as suggested by an earlier investigation (19). This cooperation, however, is still poorly developed within cardiac rehabilitation programs (20), and current evidence of intervention benefits in terms of return to work among people with CHD is weak (21). Finally, beyond the scope of clinical medicine, tailored measures in occupational settings are required among patients with cardiac disease who return to work, given the fact that those people are likely to experience higher levels of stressful working conditions (22). Preliminary findings confirm that workplace-oriented and multidisciplinary programs (including cognitive behavioral therapy and coaching) are effective to job retention and disease management (23,24).

In conclusion, the study by Trudel et al. (12) provides a new piece of research evidence that work-related factors play an important role in CHD prognosis. Occupational health services are urgently needed to be incorporated into cardiac rehabilitation programs and secondary prevention of CHD.

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