

EDITORIAL

Do Long Hours at Work Increase One's Risk for Developing Coronary Heart Disease?

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The relationship between stress, heart disease, and sudden death has been recognized since antiquity.¹⁻⁴ The incidence of clinical manifestations of coronary heart disease (CHD), such as myocardial infarction and sudden death, increase significantly following stressful natural disasters, such as hurricanes, earthquakes, and tsunamis.^{5,6} The commonly cited explanation for this phenomenon is marked activation of the adrenocortical axis and the sympathetic nervous system with associated tachycardia and hypertension. In addition, psychological stress increases levels of circulating factors associated with inflammation, a setting that favors the development of atherosclerosis.⁷

See Article by Fadel et al.

The impact of stress on a particular individual can be difficult to measure, and the same stressor can elicit different responses in different individuals. A colleague, Gordon Ewy, loved to tell the following anecdote. One busy day in the outpatient clinic, he saw 2 women who had recently been divorced. One came into the office crying because of her dissolved relationship, whereas the other entered laughing because she had escaped from a troubled marriage. The first patient was clearly experiencing severe psychological distress, whereas the second individual felt only relief. If a blood-borne biomarker for stress existed and had been measured in these 2 patients, the first woman

would almost certainly have had a much higher level compared with the second woman. Unfortunately, we do not yet have an easily measured biomarker of stress for use in daily clinical medicine, and therefore, clinicians are dependent on the patient's description of how stressful a particular situation is or was for them.

Patients often believe that the development of their CHD was, in part, related to a stressful work environment. The relationship between job stress and CHD has been studied several times, and a positive relationship has often been observed. Aboa-Eboule and colleagues, in Montreal, Canada, prospectively studied 972 men and women, aged 35 to 59 years, who had returned to work after a first myocardial infarction. During follow-up, perceived chronic job stress was an independent predictor of a recurrent CHD event.⁸ Eller and coworkers performed a systematic review of work-related psychosocial factors and the development of CHD.⁹ They reported that several older studies had demonstrated a relationship between job stress and manifest CHD. However, they also noted that in more recent studies on this topic, the association between job stress and CHD could be more fully explained by a connection to job demand rather than job stress. In addition, these investigators noted that there was insufficient evidence of an association between effort-reward imbalance, injustice, job insecurity, or long working hours and the development of CHD.

Recently, Hannerz and coinvestigators investigated >145 000 randomly selected full-time Danish workers to test if the incidence of CHD, the use of

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antihypertensive drugs, or both were independently associated with weekly working hours among full-time employees in Denmark.¹⁰ In this large sample of Danish workers, the investigators failed to find any statistically significant association between work hours and CHD or antihypertensive drug use.

In the current issue of the *Journal of the American Heart Association (JAHA)*, Fadel et al describe a moderate but statistically significant positive relationship between long working hours and the development of clinical manifestations of ischemic heart disease in a large randomly selected cohort of French workers.¹¹ This investigation was a retrospective analysis of information obtained from self-administered questionnaires and clinical examinations.

These French authors defined long work hours as working for >10 hours daily for at least 50 days per year. Overall, they noted that exposure to long work hours for ≥10 years was associated with a 24% increased risk of developing CHD (adjusted odds ratio, 1.24; 95% CI, 1.08–1.43; $P=0.0021$). Supporting their results was a previous meta-analysis that found a 13% elevated risk for the development of CHD in individuals who worked >55 hours per week compared with workers who performed only 35 to 40 hours of labor per week.¹² Because the expected weekly hours of work in Denmark is 37, and in France 35, the French workers had perhaps experienced a somewhat greater increase than had the Danish workers in the study by Hannerz et al.¹⁰

The French authors suggest that the relationship between long work hours and CHD might be the result of unhealthy behaviors, such as poor diet, smoking, and lack of exercise, that resulted from the stress of their prolonged periods of work. Alternatively or additionally, they propose that activation of the autonomic nervous system or the immune system might have played a role in the development of increased CHD risk. The authors acknowledge limitations to their results. The data were collected retrospectively and were self-reported by the subjects involved. In favor of the results, however, was the large sample size, which was taken from a population-based cohort of randomly selected adults enrolled in the French National Health Insurance System, which covers >80% of the French population.

As someone who has lived and worked in Denmark (J.S.A.), this author's tongue-in-cheek explanation for the difference between the Danish and French reports is that Danes do not mind working long hours because they are among the happiest people in Europe and among the happiest people in the world.¹³ In 2019, Denmark was listed number 2 of the 45 European countries in the Happiest Country in Europe Index, whereas France was number 16. Denmark has invariably ranked first or second in the European happiness

index, whereas France has ranked as one of the lowest of the financially well-positioned European countries. The happiness index is developed each year from scores related to 7 different factors that are believed to reflect citizen happiness, including financial status, generosity, healthy life expectancy, social support, perception of lack of corruption, freedom to make life choices, and lessened dystopia, which is a sense of living in a society where there is suffering or injustice. The Danes ranked better than the French in every category. Of course, there could certainly be many other reasons why the French and the Danish studies demonstrated different results, such as differing job requirements, differing work environments, or both in the 2 countries. In fact, there is a substantial body of literature that directly compares the work environment for employees in Denmark versus France, focusing on the substantially greater amount of autonomy for decision making that lower-level employees seem to have in Denmark.^{14–17}

In any case, we agree with Fadel et al,¹¹ who stated in their concluding remarks that “further studies with detailed occupational exposure information (including duration and intensity) and lifestyles with prospective design would be relevant.”

ARTICLE INFORMATION

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Disclosures

None.

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