

Vital exhaustion: ready for prime time?

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This editorial refers to ‘Ranking of psychosocial and traditional risk factors by importance for coronary heart disease: the Copenhagen City Heart Study’[†], by P. Schnohr et al. on page 1385.

Popular and widespread beliefs associate emotions and environmental factors with cardiovascular diseases. Over 2000 years ago, the Roman physician Celsus noted, ‘fear and anger, and any other state of mind may often be apt to excite the pulse’. William Harvey in 1628 wrote, ‘every affection of the mind that is attended by either pain or pleasure, hope or fear, is the cause of agitation whose influence extends to the heart’.

These and many other observations became established as scientists in the 20th century began to explore associations of psychosocial factors with the genesis of acute and chronic cardiovascular diseases. As shown in *Figure 1*, numerous individual and environmental factors are proposed, and many are found to predict increased disease outcomes. These factors range from natural disasters such as earthquakes to social conditions to personality disorders to emotions. However, while there are many strong associations between psychosocial measures and cardiovascular diseases, after adjustment for known classical risk factors, psychosocial measures have never reached a status requiring physician measurement and treatment.

The potential reasons for this disconnect between observational studies with significantly increased relative risks and therapeutic interventions are several, including the following.

- (i) Measurement of psychosocial variables is often complex and outcomes difficult to classify.¹
- (ii) Many psychosocial variables are influenced by culture and differ between countries.
- (iii) While numerous mechanisms are hypothesized, such as neurohumeral dysfunction, the pathophysiology connecting psychosocial factors to the disease outcomes remains unclear.² Some studies suggest a direct effect on disease outcomes while others find effects mediated through health behaviours and classical risk factors such as smoking, blood pressure, diet, physical activity, etc.

- (iv) Psychosocial factors, while strongly predictive in observational studies, have generally failed when interventions are tested in clinical trials.³
- (v) A close research connection between cardiologists and behavioural specialists including psychiatrists and psychologists is lacking.

In this issue of the journal, Schnohr and colleagues find vital exhaustion a predictor of coronary heart disease with stronger statistical associations than other psychosocial measures and most classical risk factors.⁴ The Copenhagen City Heart Study is a population-based cohort of 8882 disease-free men and women (average age 57 years) who were examined in 1991–1994 including measures of vital exhaustion and other psychosocial indices. Disease events were assessed until April of 2013. Vital exhaustion and systolic blood pressure were predictive of coronary disease outcomes in men, and smoking and vital exhaustion were predictive in women. Vital exhaustion accounted for 21.1% of the population-attributable risk in men and 27.7% among women. The authors conclude that vital exhaustion should be included in the European Society of Cardiology (ESC) guidelines for clinical practice of prevention along with other psychosocial measures.⁵

Vital exhaustion was first described by Appels in 1980 in a study of psychological precursors of myocardial infarction and sudden death.⁶ Seventeen questions are asked which focus on excessive fatigue, feelings of demoralization, or depression and irritability. A point score is derived based on the number of questions answered that describe these negative feelings/emotions. There is overlap with measures of depression, but vital exhaustion is independent.⁷ Women report more vital exhaustion than men. Research subjects who are older, weigh more, are less educated, poor, smoke cigarettes, sedentary, black, diabetic, or hypertensive all report more vital exhaustion. Adjustment for these factors reduces but does not eliminate the association of vital exhaustion with cardiovascular disease outcomes.⁸

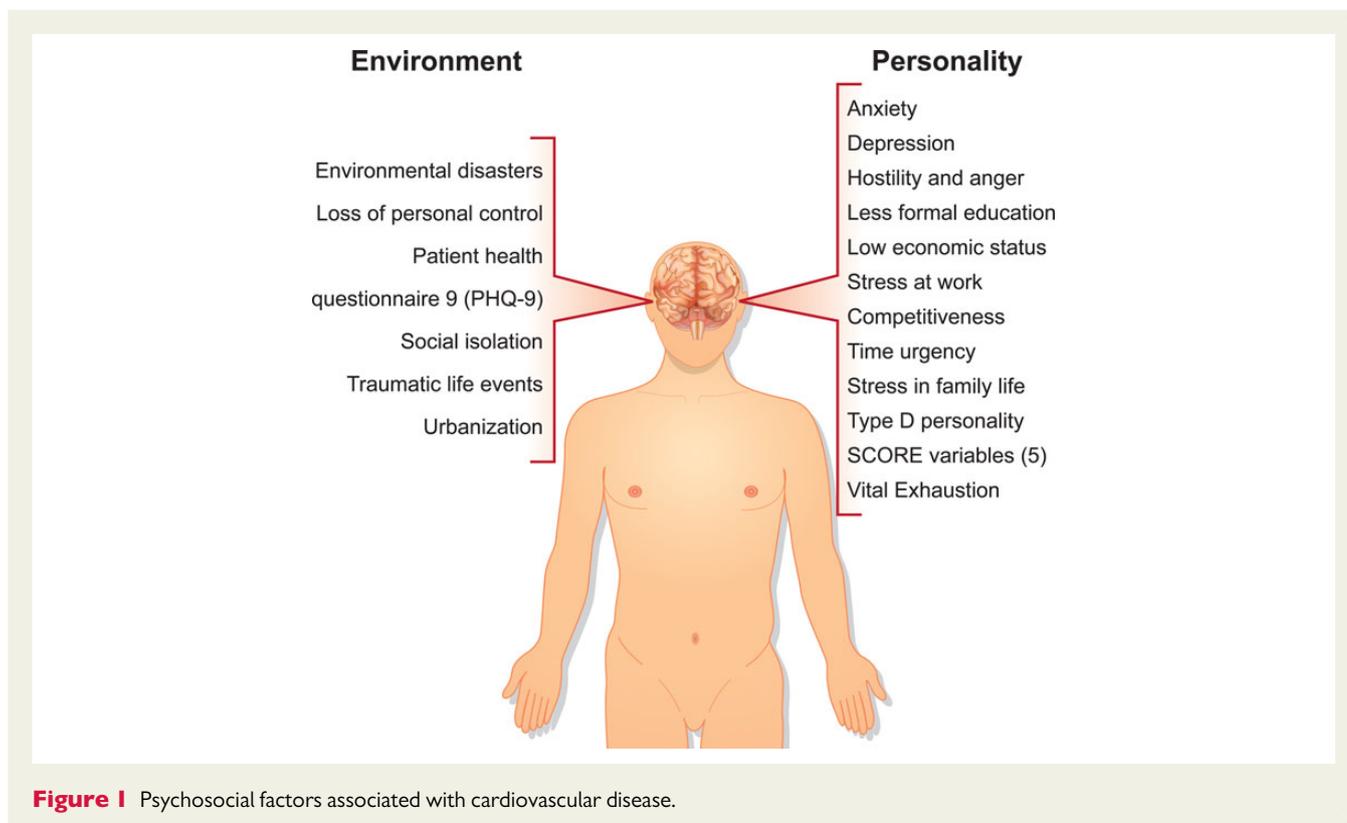
The conclusion of Schnohr and colleagues is a recommendation that vital exhaustion be included in the prevention guidelines of the ESC SCORE programme.⁵ Current SCORE recommendations for evaluation of psychosocial factors are part of those shown in *Figure 1*.

The opinions expressed in this article are not necessarily those of the Editors of the *European Heart Journal* or of the European Society of Cardiology.

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Psychosocial risk factors result in impediments to a healthy lifestyle and problems adhering to treatment recommendations. More extensive screening such as depression evaluation is not recommended as helpful. The psychosocial risk factors are not judged to be of the same importance as the classical risk factors.

This recommendation for inclusion of vital exhaustion in risk measurement and potential treatment in cardiovascular disease prevention requires further consideration. In addition to the study of Schnohr and colleagues, there are numerous epidemiology studies published since 1980. All publications find increased risk associated with higher vital exhaustion scores but they are attenuated by adjustment for other risk factors.^{7,9} Most work is found in Western Europe, although the ARIC study (Atherosclerotic Risk in Communities) in the USA found similar associations in a North American population.

The work of Schnohr has some of the weaknesses noted above and some others. It is impressive that a set of questions indicating fatigue, demoralization, and irritability is still predictive 20 years after the data collection. Is this indicative of a certain permanent personality type? Is it a type that does not follow a healthy lifestyle or medical advice? In the 20 years that passed since the survey, the classical risk factors are better controlled in the clinic, and smoking rates declined in this population. In this same Copenhagen City Study, other authors find that systolic blood pressure is decreasing in the population, presumably due to better detection and treatment.¹⁰ They attribute observed declining mortality to this change in blood pressure. It is, perhaps, not surprising that the classical risk factors decline in importance as they are effectively treated.

In addition to vital exhaustion, the authors measured other psychosocial constructs. These included education level, social networks, life events during childhood, life events during adolescence, and work-related life events. The only other associations were with education. However, many other psychosocial characteristics known to be predictive of cardiovascular outcomes were not measured, such as depression, anxiety, hostility, and anger. These characteristics, already in the ESC SCORE recommendations, overlap some in vital exhaustion.

There are also questions of practicality in the busy clinic practice. The vital exhaustion questions require the time of the patient to complete and of the staff in scoring the instrument. The physician must interpret the score in the context of that individual patient. Does it add to the clinical and psychosocial information the clinician already has?

Finally, there is the question of treatment. A recent Cochrane review of 24 randomized trials with psychological interventions on individuals with documented cardiovascular disease found small to moderate reductions in anxiety and depression but no reduction in all-cause mortality, risk of revascularization, or non-fatal infarction.¹¹ Similarly, another Cochrane review of psychological and pharmacological interventions in 16 randomized trials demonstrated a small beneficial effect on depression but no change in mortality or cardiovascular event rates in patients with prevalent disease.¹² The characteristics associated with vital exhaustion, i.e. excessive fatigue, depression, and irritability, are common, as shown in this Copenhagen City Study. The ability of the healthcare practitioner to improve lifestyles, alter work and family stresses, and change the environment to improve the patients' daily situation is limited. This is

particularly true in the primary prevention setting such as described in the participants in this study.

Asking the original question: vital exhaustion: ready for prime time? The answer is probably no. Until we understand the underlying mechanisms and have interventions that can alter the outcomes, it is a tool for research, not clinical practice. That research should closely involve behavioural scientists with expertise in the association of psychosocial factors with health.

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