

Psychosocial Risk Factors for Acute Myocardial Infarction

Reviewed by K.M. Venkat Narayan, MD, MPH, FRCP, FACP

STUDY

Rosengren A, Hawken S, Ounpuru S, Sliwa K, Zubaid M, Almahmeed WA, Blackett KN, Sitthi-amorn C, Sato H, Yusuf S, for the INTERHEART investigators: Association of psychosocial risk factors with risk of acute myocardial infarction in 11,119 cases and 13,648 controls from 52 countries (the INTERHEART Study): case-control study. *Lancet* 364:953–962, 2004

SUMMARY

Objective. To investigate the relation of psychosocial factors to the risk of myocardial infarction (MI).

Design. A case-control study including 11,119 patients with a first MI and 13,648 age- and sex-matched control subjects.

Setting. Two hundred and sixty-two centers in Asia, Europe, the Middle East, Africa, Australia, and North and South America.

Exposure. Psychosocial stress was assessed by four simple questions about stress at work and at home, financial stress, and major life events in the past year. Additional questions assessed locus of control and presence of depression.

End points. Adjusted odds ratios for association with first MI.

Results. Controlled for confounders, people with MI reported higher prevalence of all four stress factors than people without an MI: permanent work

stress (10.0 vs. 5.0%); stress at home (11.6 vs. 8.6%); severe financial stress (14.6 vs. 12.2%); and stress life events (16.1 vs. 13.0%). Depression was also more common among the cases (24.0 vs. 17.6%). Those reporting general stress at work, home, or both were 1.45 times more likely to have an MI than those not reporting general stress (99% CI 1.30–1.61). Those reporting severe financial stress were 1.33 times more likely to have an MI (1.19–1.48). Those reporting stressful life events in the past year were 1.48 times more likely to have an MI (1.33–1.64). Those reporting depression were 1.55 times more likely to have an MI. These findings were consistent across regions, in different ethnic groups, and in both sexes.

Conclusion. Psychosocial stressors are associated with increased risk of acute MI.

COMMENTARY

Cardiovascular disease (CVD) is the leading cause of death among people with diabetes, who have 2–3 times the risk of CVD than those without diabetes.¹ Prevention of CVD among people with diabetes is, therefore, important. Several risk factors (e.g., dyslipidemia, smoking, hypertension) for CVD are well established, but a substantial proportion of CVD risk remains unexplained, and other risk factors are likely to be involved.

Psychosocial variables have received attention as potential risk factors for CVD, but measurement of these factors is complex and difficult.

Because these factors are of a subjective nature, there has been concern that the measures of stress and other psychosocial variables may not be suitable for different countries, cultures, and ethnic groups. It has also not been clear whether the effect of psychosocial factors would be similar or different across countries, cultures, and ethnic groups.

These recently published results of the INTERHEART study make a huge contribution to our knowledge on this topic. The study not only has addressed the association of several psychosocial stressors with the risk of acute MI, but it also has done so among a diverse group of 11,119 patients and 13,648 age- and sex-matched control subjects from 262 centers in 52 countries around the globe. This enormous effort yielded findings that self-reported psychosocial factors (perceived stress at work or home, financial stress, stressful life events, depression, and perceived disempowerment) are associated with the risk of the first acute MI; that the effect of stress is independent of socioeconomic status and smoking; and that the effect is generally consistent across geographic regions, in different age and ethnic groups, and in both men and women.

There are two limitations of this study that need to be borne in mind. The first is that of measurement of stress. There is no consensus on either the definition or measurement of psychosocial stress. This study used but one set of questions, and therefore issues of validity and accuracy of measurement remain. Furthermore, stress is a highly subjective measurement and is

therefore open to potential bias. The second limitation is that the study used a case-control design. While the authors have paid meticulous attention to the design and have controlled for several potential confounders, quantification of any potential biases is difficult. Furthermore, establishing causality in a case-control design is always fraught with difficulty.

Despite these limitations, however, the results of the INTERHEART study

highlight two issues: that the relationship between psychosocial factors and CVD may be more important than previously recognized, and that the effect of these factors may be similar across age, sex, ethnicity, and geography. Clearly, further research into the true effect of psychosocial factors as a potential cause of CVD is needed. The INTERHEART study also reinforces the importance of aggressive multi-factorial intervention to lower CVD risk.

REFERENCE

¹Saydah SH, Eberhardt MS, Loria CM, Brancati FL: Age and the burden of death attributable to diabetes in the United States. *Am J Epidemiol* 156:714–719, 2002

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