

# Anger and hostility harmful to the heart, especially among men

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Anger and hostility are significantly associated with both a higher risk for coronary heart disease (CHD) in healthy individuals and poorer outcomes in patients with existing heart disease, according to the first quantitative review and meta-analysis of related studies, which appears in the March 17, 2009, issue of the *Journal of the American College of Cardiology*. Management of anger and hostility may be an important adjuvant strategy in preventing CHD in the general public and treating CHD patients, according to authors.

"[Anger](#) and [hostility](#) were found to predict a 19 percent and 24 percent increase in CHD events among initially healthy people and those with pre-existing CHD, respectively," says Yoichi Chida, M.D., Ph.D., Department of Epidemiology & Public Health, University College, London, UK. "The harmful association of anger and hostility with CHD events in healthy people was greater in men than women. This suggests that the accumulation of stress responses in daily life might have a greater impact on future CHD in men."

Authors extensively reviewed the literature on the longitudinal associations of anger and hostility with CHD events, and identified 25 studies of initially healthy populations and 18 studies of patients with CHD. While the damaging effects of these emotions have been widely asserted, previous reviews have been inconclusive.

"This review provides further evidence that psychological factors do matter in the development and progression of CHD," says Johan

Denollet, Ph.D., CoRPS research center, Tilburg University, The Netherlands, and co-author of the accompanying editorial. "Clinicians should take symptoms of anger and hostility seriously, and may consider referring their patient for behavioral intervention. We need to closely monitor and study these personality traits in order to do a better job at identifying high-risk patients who are more liable to future fatal and non-fatal coronary events."

Interestingly, there was no longer a significant association of anger and hostility with CHD when researchers performed a subgroup analysis of the studies that controlled for behavioral covariates (e.g., smoking, physical activity or body mass index, socioeconomic status) and disease treatment, suggesting that the major pathway between anger and hostility and CHD might be behavioral risk factors. In addition, a direct physiological pathway should be considered in future studies; this might involve autonomic nervous dysregulation, increases in inflammatory or coagulation factors such as C-reactive protein, interleukin 6 and fibrinogen, and higher cortisol levels.

Future research should also focus on the interplay between negative emotions and emotion regulation strategies as a determinant of major coronary events, according to Denollet.

Source: American College of Cardiology

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