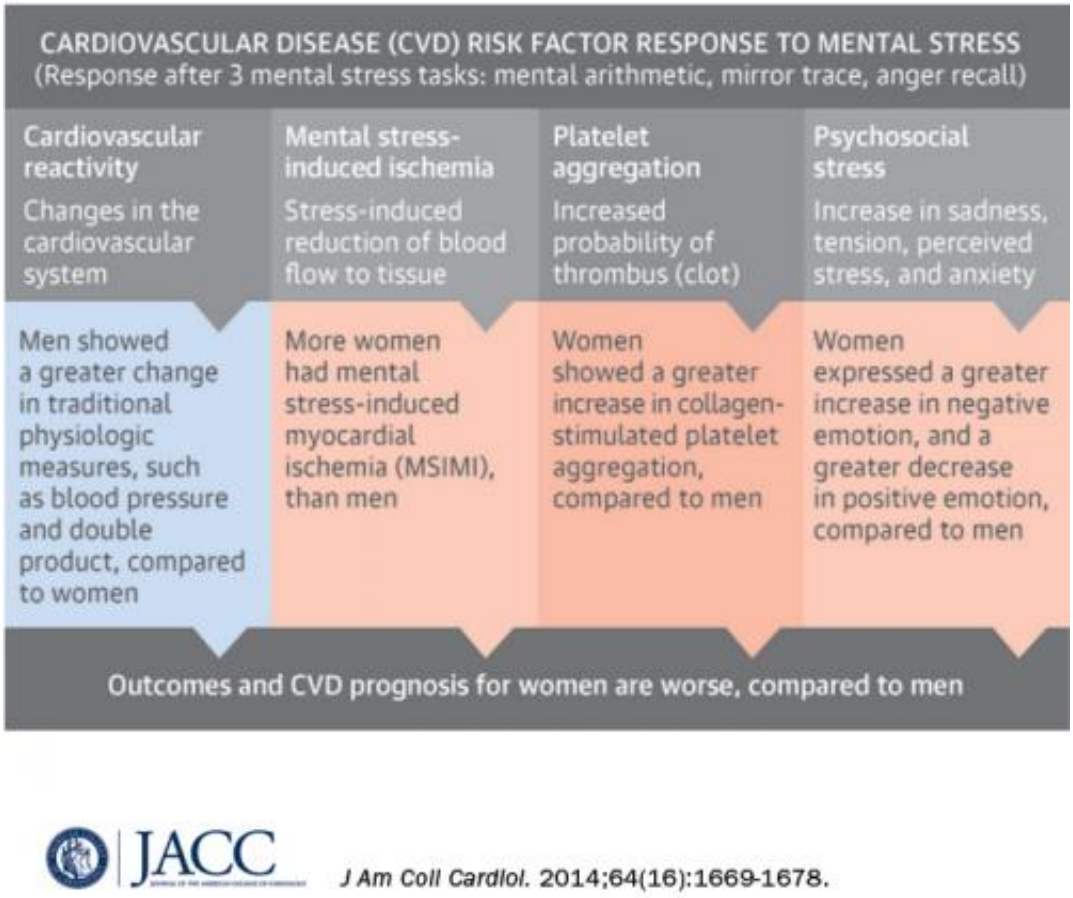
Medical Xpress

Impact of mental stress on heart varies between men, women

October 13 2014



This graphic shows the effects of mental stress on psychophysiological domains, myocardial ischemia, and outcomes in men and women. Credit: Zainab Samad et al. Sex Differences in Platelet Reactivity and Cardiovascular and Psychological Response to Mental Stress in Patients With Stable Ischemic Heart Disease:

Insights From the REMIT Study. J Am Coll Cardiol. 2014;64(16):1669-1678.

Men and women have different cardiovascular and psychological reactions to mental stress, according to a study of men and women who were already being treated for heart disease. The study, published today in the *Journal of the American College of Cardiology*, looked at 56 women and 254 men diagnosed with heart disease enrolled in a larger REMIT study of the impact of the medication escitalopram on heart disease induced by mental stress.

After undergoing baseline testing, participants carried out three mentally stressful tasks—a mental arithmetic test, a mirror tracing test, and an anger recall test—followed by a treadmill exercise test. During mental stress tasks and rest periods between tests, researchers conducted echocardiography to study changes in the heart, took blood samples, and measured blood pressure and heart rate.

Researchers from the Duke Heart Center found that while men had more changes in blood pressure and heart rate in response to the mental stress, more women experienced myocardial ischemia, decreased blood flow to the heart. Women also experienced increased platelet aggregation, which is the start of the formation of blood clots, more than men. The women compared with men also expressed a greater increase in negative emotions and a greater decrease in positive emotions during the mental stress tests.

"The relationship between mental stress and cardiovascular disease is well known," said the study lead author Zainab Samad, M.D., M.H.S., assistant professor of medicine at Duke University Medical Center, Durham, North Carolina. "This study revealed that mental stress affects the cardiovascular health of men and women differently. We need to

recognize this difference when evaluating and treating patients for cardiovascular disease."

"At this point, further studies are needed to test the association of sex differences in the heart's responses to mental stress and long term outcomes," Samad said. "This study also underscores the inadequacy of available risk prediction tools, which currently fail to measure an entire facet of risk, i.e. the impact of negative physiological responses to psychological stress in both sexes, and especially so among women."

Provided by American College of Cardiology