

Editorial

Mind-Heart-Body connection

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Article Information

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Coronary artery disease is responsible for the highest number of deaths in the world. This is also the commonest cause of untimely deaths and death among young people. Independent to conventional risk factors, psychological status of a person is known to associate with the cardiovascular risk. Psychological status can be altered by psychiatric diseases, emotions and the personality traits.

Patients who suffer from major depressive illnesses,¹ anxiety disorders,² panic attacks,³ schizophrenia⁴ and post-traumatic stress disorder⁵ also have a higher risk of cardiovascular events. Many patients who are on long-term treatment for psychiatric diseases ultimately die from a cardiovascular disease such as myocardial infarction, stroke or heart failure.

The long-term exposure of cardiovascular system to the autonomic and hormonal dysregulation caused by chronically altered psychological status is likely to be responsible for the increased cardiovascular risk in these individuals.⁶ This could be due to haemodynamic changes, inflammation and dysfunction of coronary endothelium, altered myocardial perfusion and cardiac arrhythmias associated with increased levels of circulating pro-inflammatory mediators, catecholamines and steroids hormones as a result of activated hypothalamo-pituitary-adrenocortical axis and renin-angiotensin-aldosterone axis. Chronically activated sympathetic nervous system resulting increased heart rate and blood pressure during stress, anxiety and depression may play a significant role in increased cardiovascular risk in these patients. In addition, psychological conditions may activate platelets by releasing chemokines like b-thrombomodulin and platelet factor⁴ leading to increased risk of coronary thrombosis.⁷ Also, psychological status may act as a possible barrier to lifestyle modifications and compliance to medications.

A somatic manifestation may often be the first presentation of a psychiatric condition. Chest pain may be the presenting complain of many psychiatric disorders including anxiety, depression, somatization disorder and hypochondriasis.<https://doi.org/10.4038/sljms1.v1i2.34>

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The prevalence of depression is twice higher among patients with coronary artery disease compared to the general population.⁸ Also, anxiety disorders are commoner among hospitalized patients with myocardial infarction and patients admitted for revascularization procedures. A major depressive illness significantly increases the risk of myocardial infarction, death from myocardial infarction and all-cause mortality.⁹ Also, depression and anxiety are associated with poor survival and quality of life following myocardial infarction and in patients with chronic heart failure.¹⁰ Proper management of these psychiatric conditions including drug therapy and psychological support together with the management of cardiovascular condition will significantly reduce the morbidity and mortality of these patients.¹¹

Social deprivation, including low socioeconomic status, doing a low-status occupation, low income, low educational level and living in a poor residential area, is associated with increased cardiovascular risk. Smoking, alcoholism, other substance abuses and unhealthy food choices are also connected to poor socio-economic status. Individuals who are socially isolated, lack of support and disconnected from others, have an increased risk of myocardial infarction and cardiovascular mortality.¹²

Chronic stressors of work including high physical and psychological strain, long working hours, exhaustion and unfairness are also associated with increased risk of premature deaths from cardiovascular diseases.¹³ Chronic stressors associated with family life are also associated with increased cardiovascular risk.¹⁴ The cardiovascular risk of chronic stress is higher among women more than men.¹⁵

Strong negative emotions during critical life events such as defeat, grief and outburst of anger may trigger acute coronary events.¹⁶ The personality trait, which is characterized by mistrust, rage and anger and the tendency to engage in aggressive and maladaptive social relationships, is called hostility. Hostility is known to associate with increased cardiovascular events in healthy individuals as well as in patients with established coronary artery disease.¹⁷ Individuals with a type D (distressed) personality also have a range of negative emotions and social inhibition. They are more likely to be socially isolated, depressed and hostile and carry an increased risk and high mortality from coronary artery disease.¹⁸

On the other hand, meditation and other mindfulness interventions lead to better cardiovascular health and improved quality of life. These measures are associated with lower risk of myocardial infarction, stroke and death and cardiovascular death.¹⁹ Meditation reduces heart rate, blood pressure and oxygen consumption by lowering the

activation of sympathetic nervous system. Mindfulness is helpful in smoking cessation, regular physical activity, healthy dietary habits, weight control, better sleep, reducing stress levels, anxiety and depression and improving overall wellbeing. Although there is no strong scientific evidence, breathing exercises, physical relaxation techniques and yoga are also believed to be associated with improved cardiovascular health.

In summary, the psychological status contributes to cardiovascular health and cardiac diseases. While negative thoughts and emotions lead to increased cardiovascular risk, positive thoughts and mindfulness lead to cardiovascular risk reduction.

References

1. Penninx BW. Depression and cardiovascular disease: Epidemiological evidence on their linking mechanisms. *Neurosci Biobehav Rev.* 2017; **74**: 277-86.
2. Kawachi I, Sparrow D, Vokonas PS, et al. Symptoms of anxiety and risk of coronary heart disease. The Normative Aging Study. *Circulation.* 1994; **90**: 2225-9.
3. Smoller JW, Pollack MH, Wassertheil-Smoller S, et al. Panic attacks and risk of incident cardiovascular events among postmenopausal women in the Women's Health Initiative Observational Study. *Arch Gen Psychiatry* 2007; **64**: 1153-60.
4. Fan Z, Wu Y, Shen J, et al. Schizophrenia and the risk of cardiovascular diseases: a meta-analysis of thirteen cohort studies. *J Psychiatr Res.* 2013; **47**: 1549-56.
5. Edmondson D, Kronish IM, Shaffer JA, et al. Posttraumatic stress disorder and risk for coronary heart disease: a meta-analytic review. *Am Heart J.* 2013; **166**: 806-14.
6. Grippo AJ, Johnson AK. Stress, depression and cardiovascular dysregulation: a review of neurobiological mechanisms and the integration of research from preclinical disease models. *Stress.* 2009; **12**: 1-21.
7. Musselman DL, Tomer A, Manatunga AK, et al. Exaggerated platelet reactivity in major depression. *Am J Psychiatry.* 1996; **153**: 1313-7.
8. Dowlati Y, Herrmann N, Swardfager W, et al. Relationship between hair cortisol concentrations and depressive symptoms in patients with coronary artery disease. *Neuropsychiatr Dis Treat.* 2010; **6**: 393-400.
9. Barefoot JC, Schroll M. Symptoms of depression, acute myocardial infarction, and total mortality in a community sample. *Circulation.* 1996; **93**: 1976-80.
10. Hare DL, Toukhsati SR, Johansson P, et al. Depression and cardiovascular disease: a clinical review. *Eur Heart J.* 2014; **35**: 1365-72.
11. Taylor CB, Youngblood ME, Catellier D, et al. ENRICHD Investigators. Effects of antidepressant medication on morbidity and mortality in depressed patients after myocardial infarction. *Arch Gen Psychiatry.* 2005; **62**: 792-8.

12. Barth J, Schneider S, von Kanel R. Lack of social support in the etiology and the prognosis of coronary heart disease: a systematic review and meta-analysis. *Psychosom Med* 2010; **72**: 229-38.
13. Kivimaki M, Nyberg ST, Batty GD, et al. Job strain as a risk factor for coronary heart disease: a collaborative meta-analysis of individual participant data. *Lancet* 2012; **380**: 1491-7.
14. Eaker ED, Sullivan LM, Kelly-Hayes M, et al. Marital status, marital strain, and risk of coronary heart disease or total mortality: the Framingham Offspring Study. *Psychosom Med*. 2007; **69**: 509-13.
15. Yusuf S, Hawken S, Ounpuu S, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *Lancet* 2004; **364**: 937-52.
16. Nawrot TS, Perez L, Kunzli N, et al. Public health importance of triggers of myocardial infarction: a comparative risk assessment. *Lancet* 2011; **377**: 732-40.
17. Chida Y, Steptoe A. The association of anger and hostility with future coronary heart disease: a meta-analytic review of prospective evidence. *J Am Coll Cardiol*. 2009; **53**: 936-46.
18. Grande G, Romppel M, Barth J. Association between type D personality and prognosis in patients with cardiovascular diseases: a systematic review and meta-analysis. *Ann Behav Med* 2012; **43**: 299-310.
19. Loucks EB, Schuman-Olivier Z, Britton WB, et al. Mindfulness and Cardiovascular Disease Risk: State of the Evidence, Plausible Mechanisms, and Theoretical Framework. *Curr Cardiol Rep*. 2015; **17**(12): 112.