

Evidence from Studies on Cardiovascular Disease and its Risk Factors

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Opinion

Cardiovascular disease (CVD) is the leading cause of morbidity and mortality in the world. Risk factors such as hypertension, metabolic syndrome, cigarette smoking, diabetes mellitus, elevated glucose and cholesterol levels, and obesity or being overweight are the top causes of death globally. The Emerging Risk Factors Collaboration incorporating 160,309 study participants demonstrated the independent predictive value of C-reactive protein (CRP) for coronary heart disease (CHD) and stroke, the clinical utility of CRP and fibrinogen in CVD risk prediction, and the limited role of adding the novel lipid markers apolipoprotein A-I, lipoprotein (a), apolipoprotein B, and lipoprotein-associated phospholipase A2 to traditional lipid measures. The MESA study demonstrate ethnic differences in coronary artery calcium and its association with CHD events, participants with metabolic syndrome or diabetes, the risk of CHD events varied 10-fold across levels of coronary calcium, showing that the risk of CHD is low if no calcium is present, challenging the concept of diabetes as a CHD risk equivalent.

The Jackson Heart Study provided valuable information on genetic and lifestyle determinants of metabolic syndrome, cardiovascular risk factors, novel biomarkers and prediction of CVD events. Adiponectin was directly associated with incident stroke in women, but not in men and not with CHD in either sex, whereas leptin was not associated with either CHD or stroke. The Cardiovascular Health Study reported on age-related trends in cardiovascular morbidity and physical functioning, risk factors associated with mortality in elderly adults, and associations between isolated systolic hypertension and subclinical CVD. The Strong Heart Study reports the associations between insulin resistance, metabolic syndrome, and CVD. The CARDIA study reports the relationship between weight change above the age of 15 years and changes in CHD risk factors, and the ethnic differences in the incidence of heart failure among young adults. The ARIC study described risk factor associations with carotid atherosclerosis.

The PROCAM study reports the prevalence and prognosis associated

with important CHD risk factors and development of a risk prediction score for CHD. The INTERHEART study describes nine risk factors (apolipoprotein B, apolipoprotein A-I, current smoking, diabetes, hypertension, or abdominal obesity, psychosocial index, lack of exercise, and excessive alcohol intake) were associated with acute myocardial infarcted (AMI), with risks consistent across all regions, ethnic groups, and men and women worldwide. The PURE study describe a widespread low prevalence of healthy lifestyle behaviours across countries of all levels of income, with a particularly low prevalence of these behaviours, and a very low rate of cardioprotective drug use in secondary prevention, in low-income countries.

The MONICA project showing that the rate of smoking generally decreased in men, but increased in women, the rate of systolic blood pressure and cholesterol levels decreased in both sexes, but that BMI increased significantly in over half of the populations studied. This study shows the important association between serum cholesterol and CHD. The Ni-Hon-San study showed higher cholesterol levels and higher CHD mortality than men who remained in Japan. The Whitehall studies show inverse associations between fair and respectful treatment at work and CHD and roles of genetic and nongenetic factors in the prediction of type 2 diabetes.

The Framingham Heart Study demonstrated the association blood pressure and congestive heart failure, abdominal adiposity and metabolic disorders, diabetes duration on coronary heart disease mortality. The Uberlândia Heart Study reports the association of abdominal adiposity and metabolic disorders. The sleep time and snoring have been associated with CVD risk in Western populations. In a study aimed to address the relation between sleep duration, snoring frequency and risk of (AMI) in China population. Snoring frequency, including as much as every day and 3-5 times per week, was positively associated with AMI risk and less sleep duration was associated with risk of AMI. Cardiovascular risk factors including metabolic syndrome, hypertension, cigarette smoking, high blood glucose, physical inactivity, obesity, and elevated cholesterol levels are the leading causes of death worldwide. The identification of risk factors provides new opportunities for developing more effective approaches for preventing and treatment of cardiovascular disease.

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