# Impact of Obesity on Cardiovascular Disease

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**KEYWORDS**

• Obesity • Cardiovascular disease • Coronary heart disease
• Cardiac risk factors • Body mass index • Visceral obesity

The growing prevalence of obesity has created a global public health threat. Two thirds of the American population is overweight or obese[1]; moreover, the prevalence of obesity is rising in developing countries and now is reaching many impoverished nations.[2] Overweight and obesity portends metabolic and cardiovascular consequences, placing individuals at higher risk for premature coronary heart disease (CHD) morbidity and mortality (**Fig. 1**). The cascade of obesity-related conditions accrues at the upper end of normal body mass index (BMI), highlighting the curious relationship that overweight and obesity share with CHD and metabolic risks.[3] In the United States, it is estimated that obesity causes an excess of 300,000 deaths annually,[4] and potentially reduces lifespan by as much as 5 to 20 years in the morbidly obese.[5] The spread of the obesity epidemic will likely inversely impact life expectancy trends. Accordingly, today's generation of youth may be the first in the United States to not outlive their parents.[6]

In past years, the role of obesity as an independent modulator of coronary risk has been controversial. Recent evidence, however, directly links obesity to intrinsic cardiac conditions including coronary artery disease (CAD), heart failure (HF), cardiomyopathy,

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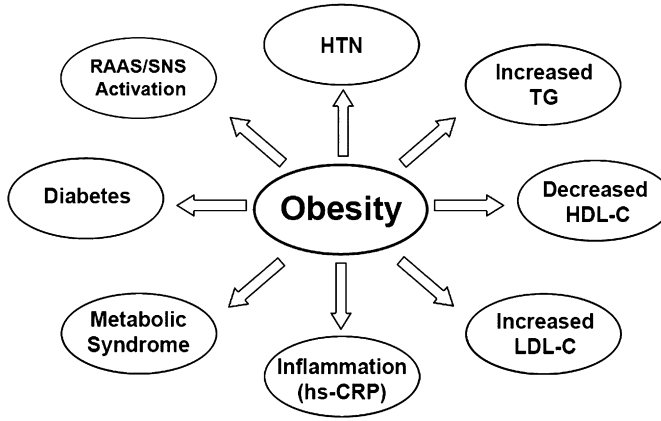


**Fig. 1.** Obesity is positioned as the only central and reversible cardiovascular risk factor that favorably influences all the other associated factors. HDL-C, high-density lipoprotein cholesterol; hs-CRP, high-sensitivity C-reactive protein; HTN, hypertension; LDL-C, low-density lipoprotein cholesterol; RAAS/SNS, renin-angiotensin-aldosterone system/sympathetic nervous system; TG, triglycerides.

and atrial fibrillation (AF), which collectively carry important health implications. In addition, excess adiposity appears to amplify Framingham CHD risk in patients who are followed over time for actual CHD events (**Fig. 2**). Potentially, many of the obesity-associated risks are partially remediable or preventable with treatment, education, and lifestyle modification. This article explores the impact of obesity on cardiovascular disease.

## OBESITY AND CORONARY HEART DISEASE RISK FACTORS IN THE PEDIATRIC POPULATION

For youth, the prevalence of obesity—defined as a BMI (weight in kilograms divided by height in meters squared) at or above the 95th percentile for age and sex—is 10% for children aged 2 to 5 years and 15% for 6- to 19-year-olds.[7] This prevalence represents

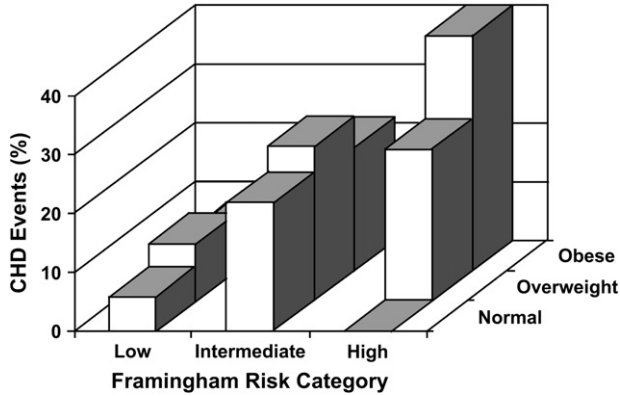


**Fig. 2.** Amplification of Framingham CHD risk by excess adiposity in 827 apparently healthy siblings (mean age, 46 years) over a mean follow-up of 8.7 years. (*From* Mora S, Yanek LR, Moy TF, et al. Interaction of body mass index and Framingham risk score in predicting incident coronary disease in families. Circulation 2005;111(15):1871–6; with permission.)