



Obesity, itself, can cause heart problems. Obesity can cause conditions like high blood pressure, diabetes, sleeping problems, and high cholesterol that also increase your risk of having a heart attack or any heart disease. Children with excess weight are also more affected by heart disease and sometimes, this is irreversible. There are simple things that we can do in our daily lives that can prevent obesity and lower our risk of heart disease.

**Fact 1** Heart disease is the number one cause of death in the United States in both men and women.

- About 600,000 people die of heart disease in the United States every year. This means that one in every four deaths in the U.S. are from heart disease alone.<sup>1</sup>
- Overweight and obesity predispose people to heart problems such as coronary heart disease, heart failure, and sudden death because of their impact on the heart and its blood vessel system.<sup>2</sup>

**Fact 2** Obesity, by itself, is an independent risk factor for heart and blood vessel disease.<sup>3,4,5</sup>

- Changes in heart function occur as fat tissue accumulates in excess amounts, even in if there are no obvious other weight-related conditions present.<sup>2</sup>
- We now know that fat tissue in our body plays an active role in our body's daily function and even some of its dysfunction. It can release chemicals that cause a chronic inflammatory state that adds to the increased risk of heart and blood vessel disease associated with obesity.<sup>6</sup>
- If a person were to gain 22 pounds, he or she might only see a slight increase in their blood pressure (3.0 mm Hg higher systolic and 2.3 mm Hg higher diastolic) but, this can increase their risk of heart disease by about 12 percent.<sup>7</sup>

**Fact 3** Obesity can cause many of the diseases that can also increase the risk of heart disease.

- Having extra body weight is thought to be the cause of up to 26 percent of cases of high blood pressure in men and 28 percent of high blood pressure in woman according to a review from the Framingham Heart Study.<sup>8</sup>
- The risk of diabetes also increases as weight increases. The Nurses' Health Study found that people who were moderately affected by obesity were a 100 times more likely to develop diabetes compared to people with normal weight. Just having diabetes itself is a risk factor for heart and blood vessel disease. Diabetes can double the risk of heart and blood vessel disease in men and triple this risk in women.<sup>9,10,11,12</sup>
- Obesity is one of the strongest risk factors for a sleeping disorder called obstructive sleep apnea (OSA) in both males and females. A study of 700 adults showed that a 10 percent increase in weight led to someone being 6 times more likely to have OSA. Sleep apnea appears to be related to increase in high blood pressure, heart and blood vessel disease, irregular heartbeat, and possibly heart failure.<sup>13,14</sup>

- Metabolic syndrome is a group of risk factors that is commonly seen in obesity (abnormal cholesterol panel, high blood pressure, excess weight around abdomen, and abnormal fasting blood sugar). Individuals with this syndrome have a 16-18 percent increase in their risk of having their first heart disease episode over the next 10 years. This is just as high as people who have already had a heart attack or stroke.<sup>15</sup>

#### Fact 4 Your child's weight now can affect their risk of heart disease both now and later.

- Risk factors for heart and blood vessel disease can already be seen in overweight children. In a large study of >276,000 children, a higher childhood weight was found to have an elevated risk of have a heart disease when they became adults. The risk of any heart disease event was higher in people who had a higher weight as a child.<sup>16</sup>
- Being affected by extra weight in childhood or adolescence is associated with early atherosclerosis. Atherosclerosis is a disease where plaque builds up in your arteries. Over time, this plaque can harden. This process can happen in people without any outward signs or symptoms and slowly blocks the arteries. This can lead to a heart attack or stroke.<sup>17</sup>
- A study of about 38,000 males showed that higher weight as a teenager led to an increased risk of heart disease and diabetes. It followed these teenagers into adulthood. If the teenager with higher weight became a healthy weight adult then this decreased their risk of getting diabetes. However, the risk of heart disease was still higher in these people even if they got to a healthy weight as an adult.<sup>18</sup>

#### Fact 5 Eating healthy, being physically active, and achieving a healthy weight, can help prevent or lower your risk of heart disease.

- Eating fruits or vegetables daily and engaging in regular active physical activity is protective against having a heart attack.<sup>19</sup>
- People who followed the Mediterranean diet were found to have a 9 percent reduction in death from heart and blood vessel disease. There is some variation in this diet but it typically consists of a diet high in fruits, vegetables, whole grains, beans, nuts, and seeds using olive oil as an important source of monounsaturated fat and low to moderate amounts of fish, poultry, and dairy, with little red meat.<sup>20,21,22</sup>

The American Heart Association suggests at least 150 minutes per week of moderate exercise or 75 minutes per week of vigorous exercise (or a combination of moderate and vigorous activity) to improve overall heart health. Moderate activity can be walking briskly (at a pace of 3 miles per hour or greater), water aerobics, or bicycling. Vigorous activity is activity like jogging/running, swimming laps, hiking uphill, or jumping rope.

#### References:

1. Murphy SL, Xu JQ, Kochanek KD. Deaths: Final data for 2010. *Natl Vital Stat Rep.* 2013;61(4).
2. Poirier et al. Obesity and Cardiovascular Disease: Pathophysiology, Evaluation, and Effect of Weight Loss An Update of the 1997 American Heart Association Scientific Statement on Obesity and Heart Disease From the Obesity Committee of the Council on Nutrition, Physical Activity, and Metabolism *Circulation.* 2006; 113: 898-918
3. Manson JE , et al. Body weight and mortality among women. *N Engl J Med.* 1995;333(11):677.
4. Garrison RJ, Castelli WP. Weight and thirty-year mortality of men in the Framingham Study. *Ann Intern Med.* 1985;103(6 ( Pt 2)):1006.

5. Calle EE, et al. Body-mass index and mortality in a prospective cohort of U.S. adults. *N Engl J Med.* 1999;341(15):1097.
6. Fantuzzi G. Adipose tissue, adipokines, and inflammation. *Journal of Allergy and Clinical Immunology* Volume 115, Issue 5, May 2005, Pages 911–919
7. *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report: National Institutes of Health. Obes Res.* 1998; Suppl 2: 51S–209S.
8. Wilson PW, et al. Overweight and obesity as determinants of cardiovascular risk: the Framingham experience. *Arch Intern Med.* 2002;162(16):1867.
9. Nguyen NT, et al. Relationship between obesity and diabetes in a US adult population: findings from the National Health and Nutrition Examination Survey, 1999-2006. *Obes Surg.* 2011 Mar;21(3):351-5.
10. Mokdad AH, et al. Prevalence of obesity, diabetes, and obesity-related health risk factors, 2001. *JAMA.* 2003;289(1):76.
11. Colditz GA, et al. Weight gain as a risk factor for clinical diabetes mellitus in women. *Ann Intern Med.* 1995;122(7):481.
12. Kannel WB, McGee DL. Diabetes and cardiovascular risk factors: the Framingham study. *Circulation.* 1979;59(1):8.
13. Peppard PE, et al. Longitudinal study of moderate weight change and sleep-disordered breathing. *JAMA.* 2000;284(23):3015.
14. Marin JM, et al. Long-term cardiovascular outcomes in men with obstructive sleep apnoea-hypopnoea with or without treatment with continuous positive airway pressure: an observational study. *Lancet.* 2005;365(9464):1046
15. Hennekens CH, Andreotti F, Barice J Metabolic Syndrome: The new silent killer. *Gen Med Ed.* 2012;1:28.
16. Baker JL, Olsen, LW et al Childhood Body-Mass Index and the Risk of Coronary Heart Disease in Adulthood. *N Engl J Med* 2007; 357:2329-2337
17. Williams CL, Hayman LL et al. Cardiovascular Health in Childhood: A Statement for Health Professionals From the Committee on Atherosclerosis, Hypertension, and Obesity in the Young (AHOY) of the Council on Cardiovascular Disease in the Young, American Heart Association. *Circulation* 2002;106:143-160
18. Tirosh, A et al. Adolescent BMI trajectory and risk of diabetes versus coronary heart disease. *NEJM* 364;14
19. Yusuf S, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *INTERHEART Study Investigators Lancet.* 2004;364(9438):937.
20. Sofi F, et al. Adherence to Mediterranean diet and health status: meta-analysis. *BMJ.* 2008;337:a1344.
21. Primary Prevention of Cardiovascular Disease with a Mediterranean Diet. Ramón Estruch et al.
22. *N Engl J Med* 2013; 368:1279-1290 April 4, 2013 DOI: 10.1056/NEJMoa1200303