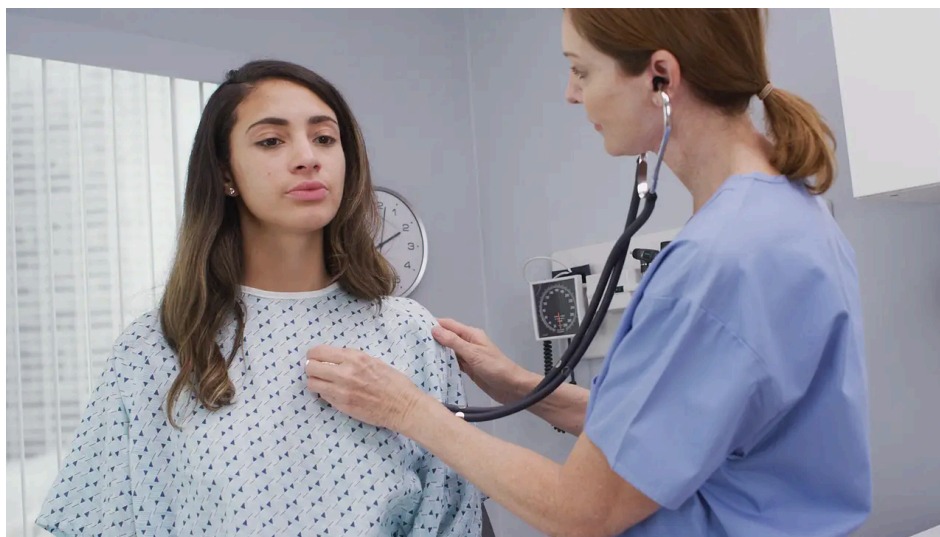


Seven Factors Account for 85% of Acute MI Risk in Young Americans

— Some factors were sex-specific, highlighting need for targeted interventions, say investigators

by [Michal Ruprecht](#), Editorial Intern, MedPage Today
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Seven risk factors, some modifiable and some not, accounted for the vast majority of risk for first-time acute myocardial infarction (MI) in young adults, according to a case-control study.

The seven factors -- diabetes, depression, hypertension, smoking, family history of premature MI, low household income, and hypercholesterolemia -- were responsible for 83.9% of the total acute MI risk in young women and 85.1% of the risk in young men, reported Harlan Krumholz, MD, SM, of Yale New Haven Hospital in New Haven, Connecticut, and colleagues.

"Developing a deeper understanding of a wide range of risk factors associated with AMI [acute MI] in young women and men and the strength of these associations, as well as identifying how these associations vary by sex and AMI subtype, has important implications for designing primary prevention strategies targeted to young adults," wrote Krumholz and co-authors in *JAMA Network Open*.

In women, diabetes (OR 3.59, 95% CI 2.72-4.74) and current smoking (OR 3.28, 95% CI 2.65-4.07) were associated with the greatest likelihood of acute MI, followed by:

- Depression: OR 3.09 (95% CI 2.37-4.04)
- Hypertension: OR 2.87 (95% CI 2.31-3.57)
- Low household income: OR 1.79 (95% CI 1.28-2.50)
- Family history of premature MI: OR 1.48 (95% CI 1.17-1.88)

In men, current smoking (OR 3.05, 95% CI 2.28-4.10) and family history of premature MI (OR 2.42, 95% CI 1.71-3.41) showed the highest odds, followed by:

- Hypertension: OR 2.19 (95% CI 1.65-2.90)
- Hypercholesterolemia: OR 2.16 (95% CI 1.49-3.15)
- Depression: OR 1.77 (95% CI 1.15-2.73)
- Diabetes: OR 1.76 (95% CI 1.19-2.60)

Low household income was not associated with acute MI in men, nor was hypercholesterolemia in women.

The researchers also calculated the population attributable fraction (PAF) for each of the risk factors to indicate the proportion of acute MI cases that could have been avoided had there been no risk factor.

PAFs were greater among women for diabetes (26.8% vs 9.9% in men), depression (25.5% vs 8.7%), hypertension (40.5% vs 31.8%), and current smoking (38.9% vs 35.1%). In

men, PAFs were greater with hypercholesterolemia (49.1% vs 1.5%) and family history of premature MI (16.8% vs 9.6%). The combined PAF of current smoking, hypertension, diabetes, and depression was 80.2% in women and 63.2% in men.

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"This study has clinical and public health implications," argued Krumholz and colleagues. "As family history of MI is a strong risk factor in young individuals, more research is needed to understand the role of familial factors in developing AMI in young adults. Some familial risk factors may portend higher risk, as recent studies have shown high polygenic score to be associated with an increased risk of AMI in this young population."

"In addition, this study identifies the need for sex-specific strategies in risk factor modification and prevention of AMI in young women," they continued. "Beyond traditional risk factors, gender-related characteristics, such as psychological stressors, depression, and poverty, also play a sizeable role in women's AMI risk, and hence a multifaceted approach targeted to these risk factors is important to improve sex- and gender-based differences in patient outcomes."

Ron Waksman, MD, of Georgetown University in Washington, D.C., told *MedPage Today* via email that the findings are "provocative" and will hopefully stimulate further investigation into the role these risk factors play in acute MI risk.

"All risks should be mitigated, and we should not ignore any of the known risks based on this study," said Waksman, who was not involved in the study.


For their study, Krumholz's group matched 2,264 patients ages 18 to 55 (by age, sex, and race/ethnicity) with a first-time acute MI from the VIRGO (Variation in Recovery: Role of Gender on Outcomes of Young AMI Patients) study to an equal number of controls from the National Health and Nutrition Examination Survey population.

The median age among men and women was 48 years (interquartile range 44-52), and 69% were women. Three-fourths of the individuals were white, 16.2% were Black, and 4.6% were Hispanic.

Among case patients, 59-63% had hypertension, 23-37% had diabetes, 82-91% had hypercholesterolemia, and about 30% had a family history of premature MI. For smoking status, 70% of women were current or former smokers, as were 80% of men.

Most participants had type 1 acute MI (82.8%), while 3.8% had type 2, and 14% had another subtype. Sex-specific risk factors were more associated with type 1 acute MI, the study found, while almost all other types of acute MI showed similar risk factor associations among men and women. Women were also disproportionately affected by other types of acute MI.



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Disclosures

Krumholz disclosed relationships (fees, grant support, or other) with Tesseract/4Catalyst, Johnson & Johnson, UnitedHealth, Element Science, Aetna, Reality Labs, F-Prime, as well as various law firms. He is also cofounder of Hugo Health and Refactor Health.

Primary Source

JAMA Network Open

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