Non-biological factors and social determinants of health important in women's CVD risk assessment

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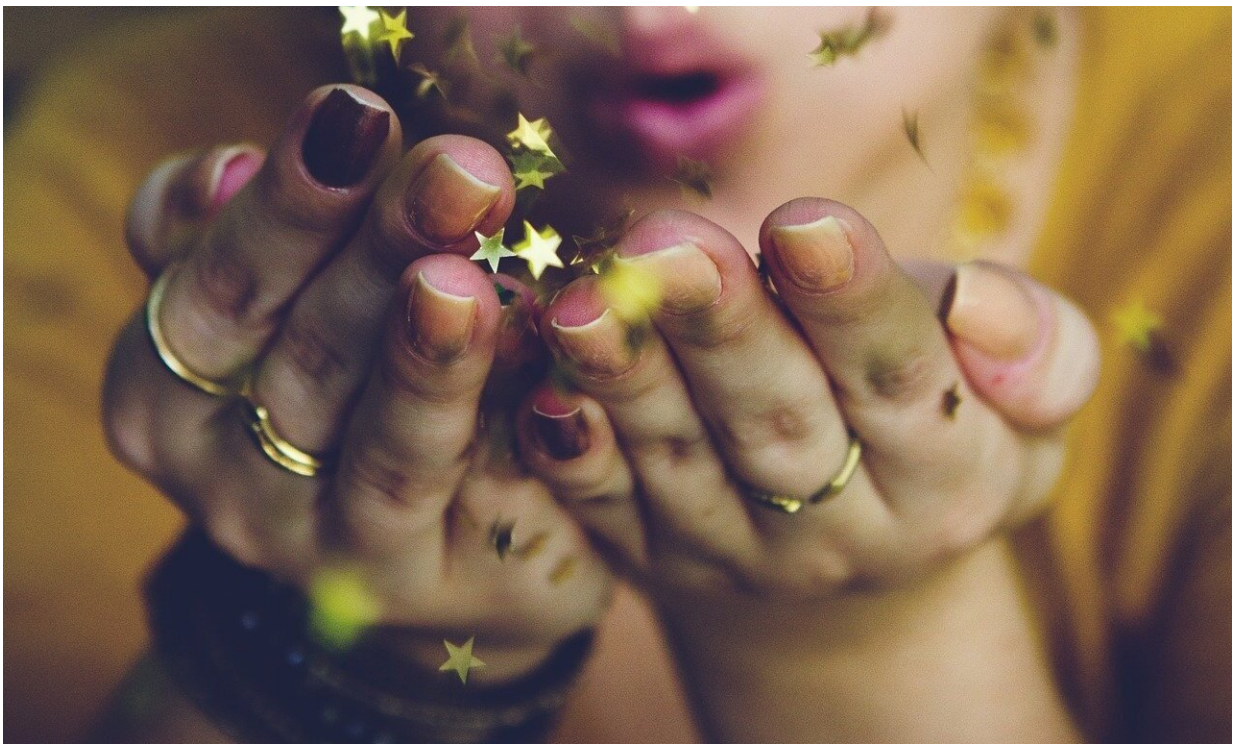

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Non-biological factors and social determinants of health are important to include in CVD risk assessment for women, particularly for women of diverse races and ethnicities other than white, according to a new

American Heart Association scientific statement published today in *Circulation*, the Association's flagship, peer-reviewed journal.

"Risk assessment is the first step in preventing heart disease, yet there are many limitations to traditional risk factors and their ability to comprehensively estimate a woman's risk for cardiovascular disease," said Jennifer H. Mieres, M.D., FAHA, vice chair of the scientific statement writing committee and a professor of cardiology at the Zucker School of Medicine at Hofstra Northwell in Hempstead, N.Y. Of note, large patient data registries used to develop cardiovascular risk assessment formulas or algorithms lack racial and ethnic diversity, so they may not accurately reflect risk for women of underrepresented groups.

A 2022 American Heart Association presidential advisory deemed it critical to understand the impact of race and ethnicity on cardiovascular risk factors in women in order to incorporate those specific risks into prevention plans and reduce the high burden of CVD among women from diverse backgrounds. This new scientific statement responds to the presidential advisory as a review of the current evidence on racial and ethnic differences in cardiovascular risk factors for women in the U.S.

What traditional risk formulas miss about women in general

Traditional formulas to determine cardiovascular disease risk include Type 2 diabetes, blood pressure, cholesterol, family history, smoking status, physical activity level, diet and weight. These formulas do not account for sex-specific biological influences on cardiovascular risk or medications and conditions that are more common among women than men.

Female-specific factors that should be included in assessing cardiovascular risk are:

- Pregnancy-related conditions, such as preeclampsia (dangerous high blood pressure that develops late in pregnancy), preterm delivery, gestational diabetes, gestational high blood pressure or miscarriage. According to the Association of Black Cardiologists, 2 out of 3 women who experience preeclampsia will die of heart disease.
- Menstrual cycle history, such as age at first period and at menopause.
- Types of birth control and/or hormone replacement therapy used.
- History of chemotherapy or radiation therapy.
- Polycystic ovarian syndrome (PCOS)—a condition that results in hormone imbalance and irregular ovulation. PCOS affects up to 10% of women of reproductive age and is associated with higher risk for cardiovascular disease.
- Autoimmune disorders—women are twice as likely as men to develop autoimmune disorders such as rheumatoid arthritis or lupus. These conditions are associated with faster build-up of plaque in the arteries, higher risk of cardiovascular disease and worse outcomes after heart attacks and strokes.
- Depression and posttraumatic stress disorder—both are more common among women and associated with a higher risk of developing CVD.

"The delivery of equitable cardiovascular health care for women depends on improving the knowledge and awareness of all members of the health care team about the full spectrum of cardiovascular risk factors for women, including female-specific and female-predominant risk factors," said Mieres, who is also the chief diversity and inclusion officer at Northwell Health.

Importance of social determinants of health in risk assessment

Social determinants of health play a significant role in the development of CVD among women, with disproportionate effects on women from diverse racial and ethnic backgrounds. These determinants include economic stability, neighborhood safety, working conditions, environmental hazards (such as exposure to air pollution), education level and access to quality health care. The impact of social factors is recognized in how they affect behavioral risk factors, such as smoking status, physical activity, diet and proper medication use.

"It is critical that risk assessment be expanded to include social determinants of health as risk factors if we are to improve health outcomes in all women," said Laxmi S. Mehta, M.D., FAHA, chair of the writing group and director of preventative cardiology and women's cardiovascular health at The Ohio State University Wexner Medical Center in Columbus, Ohio. "It is also important for the health care team to consider social determinants of health when working with women on shared decisions about cardiovascular disease prevention and treatment."

Differences in women's cardiovascular disease risk by race and ethnicity

Although cardiovascular disease is the leading cause of death for all women, the statement highlights significant racial and ethnic differences in cardiovascular risk profiles:

- **Non-Hispanic Black women** (an umbrella term encompassing African American, African and Caribbean) in the U.S. have the highest prevalence of high blood pressure in the world, above 50%. They are also more likely to develop Type 2 diabetes; have

obesity or extreme obesity; and to die of smoking-related diseases. Non-Hispanic Black women are disproportionately affected by traditional risk factors and experience the onset of CVD at younger ages. Social determinants of health are a key driver for this disparity, as detailed in the AHA's 2022 Cardiovascular Disease Statistical Update.

- **Hispanic/Latina women** (referring to women of any racial and ethnic background whose ancestry is from Mexico, Central America, South America, the Caribbean or other Spanish-speaking countries) have a higher rate of obesity compared with Hispanic/Latino men. Hispanic/Latina women born in the U.S. also have higher rates of smoking than those who were born in another country and immigrated to the U.S. Paradoxically, despite higher rates of Type 2 diabetes, obesity and metabolic syndrome, CVD death rates are 15-20% lower in Hispanic/Latina women than among non-Hispanic white women. It's possible that this "Hispanic paradox" is due to grouping diverse Hispanic subcultures together in research data, which does not account for different levels of risk among individual subgroups of Hispanic/Latino people or the possibility of healthy immigrant bias.
- **American Indian and Alaska Native women** (a diverse population including hundreds of federally recognized and non-recognized tribes across the U.S.) have a higher rate of tobacco use than other groups, with 1 in 3 American Indian or Alaska Native women currently smoking. Type 2 diabetes is the primary risk factor for heart disease among American Indian women; however, rates vary by region, with up to 72% prevalence among American Indian women in Arizona, and just over 40% among those in Oklahoma, North Dakota and South Dakota. Unfortunately, understanding the cardiovascular health of American Indian/Alaska Native people is challenging due to small sample sizes in national data, racial and/or ethnic

misclassification or other factors.

- **Asian American women** (having origins in the Far East, Southeast Asia or the Indian subcontinent) have varied rates of CVD risk within Asian subgroups: high blood pressure rates are 30% among Chinese women and 53% among Filipino women; rates of low HDL (good) cholesterol and high triglycerides are highest among Asian Indian and Filipino women; and Type 2 diabetes prevalence is highest among Southeast Asian women. The BMI level for increased risk of Type 2 diabetes is lower for Asian people than for other racial groups. Asian Americans are less likely to be overweight or have obesity compared to other racial groups, however, at the same BMI they have higher rates of high blood pressure, CVD and Type 2 diabetes. Higher body fat levels and the distribution of body fat may explain these differences: Recent research shows that Asian people generally have a higher percentage of body fat than non-Hispanic white people of the same age, sex and body mass index. In addition, studies have shown that Chinese, Filipino and Asian Indian people have more abdominal fat compared with non-Hispanic white and Black people.

"When customizing CVD prevention and treatment strategies to improve cardiovascular health for women, a one-size-fits-all approach is unlikely to be successful," Mieres said. "We must be cognizant of the complex interplay of sex, race and ethnicity, as well as social determinants of health, and how they impact the risk of cardiovascular disease and adverse outcomes in order to avert future CVD morbidity and mortality."

Future cardiovascular disease prevention guidelines may be strengthened by urging culturally specific lifestyle recommendations tailored to the cultural norms and expectations that influence behaviors, beliefs and attitudes about diet, physical activity and healthy weight, according to

the statement. The writing committee calls for community-based approaches, faith-based community partnerships and peer support in encouraging a healthy lifestyle to improve the primary prevention of cardiovascular disease among women from underrepresented groups. The statement also urges more research to address gaps in our knowledge about risk factors among women, including gathering data specific to subgroups of each race and ethnicity.

This scientific statement was prepared by the volunteer writing group on behalf of the American Heart Association's Cardiovascular Disease and Stroke in Women and Underrepresented Populations Committee of the Council on Clinical Cardiology; the Council on Cardiovascular and Stroke Nursing; the Council on Hypertension; the Council on Lifelong Congenital Heart Disease and Heart Health in the Young; the Council on Lifestyle and Cardiometabolic Health; the Council on Peripheral Vascular Disease; and the Stroke Council. American Heart Association scientific statements promote greater awareness about cardiovascular diseases and stroke issues and help facilitate informed health care decisions. Scientific statements outline what is currently known about a topic and what areas need additional research. While scientific statements inform the development of guidelines, they do not make treatment recommendations. American Heart Association guidelines provide the Association's official clinical practice recommendations.

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More information: Cardiovascular Disease Risk Factors in Women: The Impact of Race and Ethnicity: A Scientific Statement From the American Heart Association, *Circulation* (2023). DOI:

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