

Obesity significantly increased heart failure risk among women with late menopause

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While women who enter menopause before age 45 are known to be at higher risk for heart failure, obesity significantly increased heart failure risk among women who experienced late menopause—at age 55 or

older, according to new research published today in the *Journal of the American Heart Association*, an open access, peer-reviewed journal of the American Heart Association.

A woman's body produces less estrogen and progesterone after menopause, changes that can increase the risk for cardiovascular diseases including [heart failure](#), according to the American Heart Association. Menopause typically occurs between the age of 45 and 55, however, the average age for natural menopause has increased by 1.5 years over the past six decades, according to some research. In the National Health and Nutrition Examination Survey (NHANES) 1959-2018—surveys providing nationally representative estimates of the United States—the prevalence of early menopause (before age 45) was 12.6% and late menopause (after age 55) was 14.2%.

Previous research has found that women who experience early menopause are at heightened risk of heart failure. Heart failure is diagnosed when the heart is unable to pump sufficient blood and oxygen to allow the body organs to function well.

"There is a gap in knowledge about the possible influence of late menopause—occurring at age 55 or older—on the incidence of heart failure," according to lead study author Imo A. Ebong, M.D., M.S., an associate professor of medicine in the division of cardiovascular medicine at the University of California Davis, in Sacramento, California.

"We know that obesity increases the risk of developing heart failure, and the onset of menopause is associated with increased body fatness," said Ebong. "In our study, we investigated if and how obesity affects the relationship between menopausal age and the future risk of developing heart failure."

Investigators analyzed health data for nearly 4,500 [postmenopausal women](#) participating in the Atherosclerosis Risk in Communities (ARIC) Study. ARIC is a long-term research project that began enrolling participants in 1987, focused on measuring the associations between known and suspected [heart disease risk factors](#) and the development of heart disease among adults in four [diverse communities](#) in the United States: Forsyth County, North Carolina; Jackson, Mississippi; the suburbs of Minneapolis; and Washington County, Maryland. Six follow-up visits were completed by 2019.

For this analysis, participants were grouped by how old they were when they entered menopause: younger than 45 years; 45-49 years; 50-54 years; and 55 years and older. The average age of study participants was 63.5 years at the fourth visit. Women with a heart failure diagnosis before the fourth study visit were excluded from the analysis for this study.

Among many baseline measurements and assessments conducted at the fourth follow-up exam, the women provided their age at menopause, and their weight was measured. They were then classified by weight, into one of three groups: normal weight (if body mass index—BMI—was between 18.5—24.9 kg/m²); overweight (if body mass index was between 25.0—29.9 kg/m²); and obese (if [body mass index](#) was 30 kg/m² or higher). In addition, abdominal obesity was noted if [waist circumference](#) was 35 inches or more at the navel.

The heart failure risk potentially attributed to obesity as measured by BMI or waist circumference was calculated after adjusting for multiple other health and lifestyle risk factors for [heart disease](#), including other conditions such as Type 1 or Type 2 diabetes, hypertension (or [high blood pressure](#)), [kidney function](#), inflammation, left ventricular hypertrophy and prior heart attack. During an average follow-up of 16.5 years, about 900 of the women had developed heart failure that resulted in either hospitalization or death.

The analysis found significant connections for menopausal age, BMI and waist circumference and heart failure risk:

- For every six-point increase in BMI the risk of developing heart failure increased 39% for the women in the menopause-before-age-45 group; 33% for those in the age 45-49 group; and doubled (2.02 times higher) in women in the late menopause group (age 55 or older). Higher BMI was not associated with increased heart failure risk in women who reached menopause between ages 50-54.
- For every 6-inch increase in waist circumference, the risk of developing heart failure almost tripled (2.93 times higher) among the women who entered menopause at age 55 years or older.
- Waist circumference did not significantly raise the risk of heart failure for women in any of the other menopausal age groups.

"We had expected that the effect of obesity on heart failure risk would be greatest among women who had experienced early menopause. This was not so," Ebong said. "The detrimental effects of obesity on heart failure risk was greatest among women who experienced late menopause."

The information from the study may be helpful when screening for heart failure and counselling postmenopausal women about heart failure prevention, according to Ebong.

"A woman's age when she enters menopause is an important factor, and women should share this information with their physicians to guide in estimating their risk of developing heart failure," Ebong said. "Women with early menopause should be informed of their increased risk and counseled to adopt healthy lifestyle and behavioral changes. Women with late [menopause](#) should be particularly counseled to maintain a

healthy body weight and prevent obesity to decrease their risk of future heart failure."

The current study is limited because it did not include enough [women](#) to analyze separately for different types of heart failure.

"Our analysis should be repeated according to heart failure subtypes, preserved and reduced ejection fraction heart failure, to more clearly understand [heart](#) failure risk estimation and provide guidance on screening and prevention programs," said Ebong.

More information: *Journal of the American Heart Association* (2022). www.ahajournals.org/doi/10.1161/1161/JAHA.121.024461

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