

# Risk of death from heart failure is lower in women than in men

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Women with chronic heart failure survive longer than their male counterparts, according to a large analysis of studies comprising data on more than 40,000 subjects. The analysis represents the largest assessment of gender and mortality risk in heart failure - and provides evidence which many randomised trials have failed to do because they have been dominated by male patients.

Heart failure is by far the single biggest reason for acute [hospital admission](#). Its incidence is still increasing: more cases are being identified, more people are living to an old age, and more are surviving a heart attack but with damage to the [heart muscle](#). The condition arises when the heart fails to pump sufficient blood to meet the body's demands. The common symptoms of [heart failure](#) - shortness of breath, tiredness, oedema - are usually associated with failure of the left side of the heart (the [left ventricle](#), which pumps blood into the circulation), as defined by a measurement known as [left ventricular ejection fraction](#).

The latest study, published on the 8th of March in the [European Journal of Heart Failure](#), also found that [heart failure patients](#) whose ejection fraction is not reduced (i.e., is "preserved") have a lower mortality risk than those with reduced ejection fraction. Preserved ejection fraction is more common among women than men, and this, say the authors, "may be expected to lead to better survival for these patients".

The study, known as the Meta-Analysis Global Group in [Chronic Heart Failure](#) (MAGGIC), analysed data from 31 randomised and

observational studies involving 28,052 men and 13,897 women with chronic heart failure. The data were analysed for survival over three years of follow-up, and showed that 25.3% of the women and 25.7% of the men died during the three years; this represented a death rate of 137 deaths per 1000 patient-years in men and 135 per 100 patient-years in women.

When adjusted for age, however, the results showed that men had a 31% higher risk of death than women (hazard ratio 1.31, with statistically significant confidence intervals), and that male gender was an independent risk factor for death at three years (hazard ratio 1.23). The study, say the authors, was "appropriately powered to ascertain the prognostic significance of sex in patients with heart failure".

This excess [mortality risk](#) associated with male gender was of similar magnitude in patients with either reduced or preserved ejection fraction, which was not affected by either age or history of hypertension.

Other results from the study showed that women with chronic heart failure are on average older than men, are more likely to have a history of hypertension and diabetes, but that their heart failure is less likely to be caused by heart failure of ischaemic origin (reduced blood supply).

"This study has clearly demonstrated that survival is better for women with heart failure than for men, irrespective of ejection fraction, age or other variables," said first author Dr Manuel Martinez-Selles from the Gregorio Marañón University Hospital in Madrid.

"This survival benefit is inherent to female sex and there are a number of potential explanations for the better outcomes in women. The female heart appears to respond to injury differently from the male heart. For example, women have less ventricular remodelling, greater preservation of right ventricular function, and greater protection against ventricular

arrhythmias, neurohormonal activation, genetic mutations, and apoptosis. Some of these advantages could be related to pregnancy and to sex-specific differences in gene expression."

The study also found that overall women were prescribed fewer recommended treatments for heart failure than men - including angiotensin converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARBs) and beta blockers. This under-use in women, say the authors, "was particularly evident in patients with reduced ejection fraction".

**More information:** Martinez-Selles M, Doughty RN, Poppe K, et al. Gender and survival in patients with heart failure: interactions with diabetes and aetiology. Results from the MAGGIC individual patient meta-analysis. Eur J Heart Fail 2012; [doi:10.1093/eurjhf/hfs026](https://doi.org/10.1093/eurjhf/hfs026)

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