

Sex differences in heart failure outcomes in Ontario, Canada

Heart failure is a leading cause of death in women and men around the world. Despite recent advances in the management of heart failure, much still need to be learned how outcomes might differ by sex. Indeed, women and men suffer from different types of heart failure and they present with different symptoms. Research suggests that women are less likely to receive invasive testing when they present with coronary artery disease, and they may be referred later than men for coronary artery bypass surgery especially after an episode of hospitalization for heart failure. Evidence also suggests that women may be less likely than men to receive guideline-directed heart failure therapy, and the doses of their medications are titrated less optimally than in their male counterparts. This knowledge prompts further research to provide more sex-specific information that will inform policy decisions at a population level.

We studied 90,707 patients with new diagnoses of heart failure among *ambulatory* Ontario residents from 2009 to 2013. We found that in recent years, the incidence of heart failure has declined overall in both sexes and remains higher in men. But women are more likely to die from the disease. Almost 17 percent of women died within a year of follow-up, compared with just under 15 percent of men. We also found that rates of hospitalization decreased over this time period in men but increased in women.

Our research suggests that women and men had different clinical characteristics at the time of their heart failure diagnosis. Women were more likely to be older, more frail, from a lower income bracket, and have chronic lung disease, dementia, depression, high blood pressure, hypothyroidism, and advanced cancer. On the other hand, men presenting with heart failure were more likely to have had heart attacks, heart valve disease, atrial fibrillation, peripheral arterial disease, diabetes, liver and kidney disease, and to abuse alcohol. But even after accounting for these differences in risk factors, death rates were still higher in women.

These differences in risk factors elude to the fact that women and men are actually prone to different types of heart failure. Men are more likely to develop a form of heart failure that result from heart attacks, where the pumping function of the heart is reduced. This type of heart failure has been studied extensively and is more readily treatable by medications that reduce mortality and the need for hospitalization. Women, on the other hand, more often suffer from a type of heart failure with preserved pump function, which has few effective therapies. The prevalence of hypertension in older women make them more prone to developing this type of heart failure. Women also tend to present with symptoms that are “atypical”, which could lead to missed or delayed diagnosis. In addition to physiological differences, differences in health-seeking behavior, self care and compliance to therapy may in part contribute to the observed disparities. Research has also shown that physicians may recognize, investigate and treat heart diseases and stroke differently in male and female patients.

Our findings highlight the need to educate and promote awareness of sex-based disparities in

cardiac health outcomes amongst patients, healthcare providers, researchers and the community as a whole. Public and professional awareness will in turn bridge the gap in clinical care and research to truly elevate the quality of care we provide to our patients.

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