

# Divorce and low socioeconomic status carry higher risk of second heart attack or stroke

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Heart attack survivors who are divorced or have low socioeconomic status have a higher risk of a second attack, according to research from Karolinska Institutet, Stockholm, Sweden, published today in the *European Journal of Preventive Cardiology*, a European Society of Cardiology journal.

Previous studies have shown that low socioeconomic status is associated with a first [heart attack](#), but these findings could not be extended to [heart](#) attack survivors to calculate their risk of a second event.

This study enrolled 29,226 one-year survivors of a first heart attack from the SWEDHEART-registry and cross-referenced data from other national registries. Socioeconomic status was assessed by disposable household income (categorised by quintiles) and education level (nine years or less, 10-12 years, more than 12 years). Marital status (married, unmarried, divorced, widowed) was also recorded in the study.

Patients were followed up for an average of four years for the first recurrent event, which was defined as non-fatal heart attack, death from coronary heart disease, fatal stroke, or non-fatal stroke.

The study found that divorce and [low socioeconomic status](#) were significantly associated with a higher risk of a recurrent event. Each indicator was linked with recurrent events.

After adjusting for age, sex, and year of first heart attack, patients with more than 12 years of education had a 14% lower risk of a recurrent event than those with nine or fewer years of education. Patients in the highest household income quintile had a 35% lower risk than those in the lowest quintile.

Divorced patients had an 18% greater risk of a

recurrent event than married patients.

Unmarried and widowed patients had higher rates of recurrent events than married patients, but the associations were not significant. Study author Dr Joel Ohm, a PhD student at Karolinska Institutet, said the proportions of unmarried and widowed [patients](#) in the study may have been too small for the link to be statistically significant. However, he said: "Marriage appears to be protective against recurrent events and aligns with traditional indicators of higher socioeconomic status, but conclusions on the underlying mechanisms cannot be drawn from this study."

In a [subgroup analysis](#) by sex, unmarried men were at higher risk of recurrence and [unmarried women](#) were at lower risk. "These findings should be interpreted cautiously," Dr Ohm warned, "This was a subgroup analysis and we cannot conclude that women are better off being single and that men should marry and not divorce. Unmarried women had a higher level of education compared to unmarried men, and this difference in socioeconomic status may be the underlying cause."

The subgroup analysis by sex also found that higher household income was associated with a lower risk of recurrent events in men, but there was no association in women. Dr Ohm said this could be due to the lower proportion of women in the study (27%), since the age cutoff for inclusion was 76 years and women are generally older than men when they have a first heart attack. In addition, the difference between the lowest and highest quintiles of [household income](#) is likely to be greater when men have a first heart attack because they and their spouse are still of working age.

The study did not investigate reasons for the association between socioeconomic status and recurrent events. Numerous factors that are difficult to measure may be involved, such as diet and

exercise habits throughout life and even genetic factors. In theory, unequal access to healthcare and compliance with treatment regimes could play a role. Of these two, compliance appears to be a bigger issue, since most treatments were prescribed equally to all income groups and adjusting for treatment did not change the association between socioeconomic status and recurrent events.

"The take-home message from this study is that socioeconomic [status](#) is associated with recurrent events," said Dr Ohm, "No matter the reasons why, doctors should include marital and [socioeconomic status](#) when assessing a heart attack survivor's risk of a recurrent event. More intense treatment could then be targeted to high risk groups."

**More information:** Ohm J, et al. Socioeconomic status predicts second cardiovascular event in 29,226 survivors of a first myocardial infarction. *European Journal of Preventive Cardiology*. 2018. [DOI: 10.1177/2047487318766646](https://doi.org/10.1177/2047487318766646)

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