Exploring underlying reasons for the difference in sex-specific survival following out-of-hospital cardiac arrest - a mediation analysis

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Background: Previous studies have indicated a poorer survival among women following out-of-hospital cardiac arrest (OHCA), but the mechanisms explaining this difference remains largely uncertain. This study aimed to assess the survival after OHCA among women and men and explore the role of potential mediators, such as resuscitation characteristics, prior comorbidity, and socioeconomic factors.

Methods: This was a population-based cohort study including all emergency medical service-treated OHCA reported to the Swedish Registry for Cardiopulmonary Resuscitation in 2010-2020, linked to nationwide Swedish healthcare registries. The relative risks (RR) of 30-day survival were compared among women (exposure) and men (comparison) using modified Poisson regression and third variable effect analysis to investigate the importance of potential mediators in a stepwise approach.

Results: A total of 43,226 OHCA were included, of which 14,249 (33.0%) were women. The crude 30-day survival among women was 6.2% compared to 10.6% for men (RR 0.58, 95% CI=0.54-0.62). Stepwise adjustment for shockable initial rhythm attenuated the association to RR 0.85 (95% CI=0.80-0.92), and further adjustments for age and resuscitation factors (witness status, emergency medical service response time, and location) attenuated the survival difference between sexes to null (RR 0.98; 95% CI=0.92-1.05). Third variable effect analysis showed that shockable initial rhythm explained approximately 50% of the negative association of female sex on survival. Older age and lower disposable income were the second and third most important variables. Previously known comorbidities explained only a very small portion of the sex difference in survival.

Conclusion: Women have a lower 30-day survival following OHCA compared to men. The poor prognosis is largely explained by the absence of shockable initial rhythm, older age at presentation and lower disposable income.

Results from regression analyses