Disparities found in survival benefits for people receiving bystander CPR for cardiac arrest

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Credit: Unsplash/CC0 Public Domain
A new study has found race- and sex-based differences in the increased chances of survival from people who received bystander cardiopulmonary resuscitation (CPR) for out-of-hospital cardiac arrest. Average survival benefits for cardiac arrest, when the heart suddenly stops beating, could be three times as high for white adults compared to Black adults, and twice as high for men compared to women.

The findings are published in Circulation.

"CPR saves lives—that we know," said Paula Einhorn, M.D., a program officer at NIH's National, Heart, Lung, and Blood Institute (NHLBI). "Yet the disparities revealed in this research show we need to do more to understand how to ensure equitable outcomes for all patients needing CPR. We're hoping new insights will lead to better survival for these patient groups."

Researchers analyzed 623,342 cases of cardiac arrest in the United States between 2013-2022. Among those cases, 58,098 people, almost 1 in 10, survived. About 40% of adults who experienced cardiac arrest received CPR from a bystander who was not part of the emergency response team. This could have included a family member, friend, or member of the public. On average, those who received bystander CPR had a 28% greater chance at surviving compared to people who did not receive bystander CPR. They were also more likely to survive without having serious brain injuries.

However, the researchers noted marked variations when they examined the survival benefit with bystander CPR by race, ethnicity, and biological sex. Native American adults and white adults saw the greatest benefits, with a respective 40% and 33% increased odds of survival, compared to adults who did not receive bystander CPR. Conversely, Black adults had a 9% increased odds. When analyzed by sex, men and women who received bystander CPR had a respective 35% and 15%
increased odds of surviving. When all groups were assessed, Black women were 5% more likely to survive if they received bystander CPR, while white men were 41% more likely.

To identify potential factors that might account for differences in CPR quality, the authors conducted subgroup analyses based on neighborhood diversity and average income. In every case—no matter the cardiac arrest patient's income levels or where they lived—the same findings appeared: Black adults and women were least likely to benefit from bystander CPR compared to white adults and men.

"It's not just about whether bystander CPR was done, but was it done well for everyone so that, irrespective of race, ethnicity, or sex, everyone can derive the same level of benefit from someone starting CPR?" asked Paul Chan, M.D., first study author and a cardiologist at Saint Luke's Mid America Heart Institute in Kansas City, Missouri. "These findings suggest we need to have a more complex understanding of improving survival and whether CPR delivered by bystanders provides similar survival benefits to all patients."

Prior research had already found inequities in the frequency with which bystander CPR was being performed on Black and Hispanic individuals compared to white individuals, and with women compared to men in public places. In response, CPR training awareness and programs have expanded nationally, as have online courses. Mannequins resembling a woman's body have also been designed.

Evaluating access to and the effectiveness of different types of CPR trainings could be one way to identify differences in survival outcomes and inform solutions, according to researchers. For example, future studies could inquire about whether a bystander received online or in-person training; if they practiced on women mannequins or models with black or brown skin; if multiple bystanders were around, which may
indicate a person had additional support; and what kind of support from emergency dispatchers they had—and for how long—which may reveal whether a person was receiving CPR instructions for the first time.

Since the arrival times of emergency medical responders were fairly similar among groups, the researchers don't believe this factored into outcomes observed in the study. Future studies could also explore the role that underlying health conditions may have in the survival outcomes of those who needed CPR.


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