Study: Low-income people have heightened risk of death from heart attack in six health systems around the world

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Despite vastly different health care systems, low-income patients across six different countries have mortality rates 10 to 20 percent greater than

their high-income peers, according to a new study led by researchers from Harvard Medical School, the University of Texas Medical Branch, Galveston, ICES (formerly the Institute for Clinical Evaluative Sciences), and other international collaborators.

The findings suggest that income-based disparities are present even in countries with universal health care and robust social services, the researchers said. The paper, published in the journal *JAMA*, was a project of the International Health System Research Collaborative, an effort dedicated to understanding the trade-offs inherent in different nations' approaches to delivering health care.

"A country's health care system can impact treatment and outcomes for specific health conditions, like cardiovascular disease," said Bruce Landon, professor of health care policy in the Blavatnik Institute at Harvard Medical School.

"We wanted to explore whether the poorer outcomes that have been observed in lower-income Americans relative to higher-income Americans were reduced in countries with universal health insurance. We found that high-income individuals had better survival rates and were more likely to receive life-saving treatments compared to low-income individuals, regardless of their country of residence or type of health system."

The authors analyzed population-based health care billing and claims data to study all adults 66 years or older who were hospitalized with a type of heart attack known as ST-elevation myocardial infarction (STEMI), which tends to be more severe, and non-ST-elevation myocardial infarction (NSTEMI).

Outcomes for STEMI and NSTEMI patients with low incomes were compared with outcomes among patients with high incomes in the U.S.,

Canada (Ontario and Manitoba), England, Netherlands, Taiwan, and Israel between 2013 and 2018. The study included 289,376 patients hospitalized with STEMI and 843,046 patients hospitalized with NSTEMI.

Findings showed that:

- Thirty-day mortality following hospitalization generally was 1 to 3 percentage points lower for high-income patients. The largest difference was seen in Canada (14.9 percent and 17.8 percent for high versus low-income individuals with STEMI)
- Differences in one-year mortality were even larger, with the highest difference in Israel (16.2 percent and 25.3 percent for high versus low-income individuals with STEMI)
- Low-income patients in all countries were less likely to receive necessary and aggressive treatments for STEMI, such as cardiac catheterization and revascularization, and readmission rates to hospitals were higher than for low-income patients
- There were more females in the lowest-income group compared to the highest-income group in all countries

Social risk factors and disparities in health care

"These results suggest that countries around the world need to redouble their efforts to assure the delivery of equitable care to persons across the spectrum of socioeconomic status," Landon said.

The authors noted that prior research has called attention to the relatively poor performance of the U.S. health care system when it comes to delivering equitable care.

"Our analysis puts these past results in a different context by highlighting the consistency of these findings across several developed countries with

vastly different health care systems and contexts," Landon said.

While some of the differences in outcomes may be related to accumulated consequences of social risk factors related to low income and other factors outside the health care system, the researchers noted that policymakers and providers in each of these countries must also examine why lower-income individuals are less likely to receive aggressive treatments than their peers.

For example, they suggest that further efforts are needed to explore the availability and quality of hospital care in regions that serve lower-income populations, which could affect a patient's access to treatment.

Though the researchers accounted for the possible effects of other diseases the patients had, it is still possible that there were other health-related factors that influenced higher rates of death and lower rates of treatment for low-income patients.

The authors caution they did not adjust for race and ethnicity because these data were not available for all the countries and populations included in the study. Moreover, all Americans in the study had health insurance, so it is unclear if the results might have been different if uninsured Americans were included.

"Our results challenge the belief that income-based disparities are a uniquely American phenomenon. The truth is that the poverty penalty seems consistent across countries," says senior author Peter Cram, an adjunct scientist at ICES and the University of Texas. "All countries, including Canada, need to address these issues and improve health care delivery for older patients who experience severe heart attacks."

More information: Bruce E. Landon et al, Differences in Treatment Patterns and Outcomes of Acute Myocardial Infarction for Low- and

High-Income Patients in 6 Countries, *JAMA* (2023). DOI: 10.1001/jama.2023.1699