Effect of Socioeconomic Status on Acute Myocardial Infarction Outcomes

Bernheim SM, Spertus JA, Reid KJ, et al. Socioeconomic disparities in outcomes after acute myocardial infarction. Am Heart J 2007;153:313–9.

Study Overview

Objective. To examine the relationship between socioeconomic status (SES), mortality, and rehospitalization after acute myocardial infarction (AMI).

Design. Retrospective cohort study.

Setting and participants. Patients were part of the PREMIER registry, a national database that collected information from academic and nonacademic institutions to examine quality of care issues in AMI patients. Enrolled patients were from 19 medical centers who were admitted between 1 January 2003 and 28 June 2004. Patients were eligible if they had elevated biomarkers of myocardial injury and were aged 18 years with supporting evidence of AMI (≥ 20 min of ischemic signs/symptoms and/or electrocardiographic ST changes). Patients completed a baseline interview within 24 to 72 hours of admission that included questions about SES, use of the medical system, and health status. Follow-up interviews were conducted with patients at 1, 6, and 12 months postdischarge. SES was measured by self-reported household income and self-reported highest level of completed education. Quality of care measures (ie, aspirin and β blocker within 24 hours, timely reperfusion, angiotensin-converting enzyme inhibitor at discharge for patients with left ventricular systolic dysfunction, aspirin and β blocker at discharge, smoking cessation) were consistent with measures used by the Joint Commission on Accreditation of Healthcare Organizations and Centers for Medicare and Medicaid Services. Clinical patient factors were collected to adjust for comorbidities.

Main outcome measures. The primary outcome measures were all-cause mortality and all-cause rehospitalization within 1 year after admission.

Main results. Both lower household income and education level were associated with higher mortality at 1 year (hazard ratio [HR], 2.80 [95% confidence interval {CI}, 1.37–5.32]) and rehospitalization after AMI (HR, 1.55 [95% CI, 1.17–2.05]). Patients with low SES had poorer clinical status at presentation and experienced poorer quality of care. In multivariate analysis, the relationship between household income and mortality was not significant (HR, 1.19 [95% CI, 0.54–2.62]) after adjusting for patient factors and quality of care. The relationship between income and rehospitalization was still significant (HR, 1.38 [95% CI, 1.01–1.89]) even after adjusting for patient care factors; however, the relationship was not affected after adjusting for quality of care.

Conclusion. Patients with lower SES had worse clinical status on admission and experienced poorer quality of care. After adjusting for these factors, lower SES was still significantly associated with increased rehospitalization after AMI but not with mortality.

Commentary

Several studies have established that patients with lower SES have a greater mortality risk after AMI [1,2]; however, these studies have lacked the detailed clinical data or data on patient-level SES to determine whether worse outcomes are due to differences in baseline clinical status, poorer quality of care, or both. This research is important so that interventions can be appropriately aimed to eliminate these disparities. Using the PREMIER database, Bernheim et al found that patients with lower SES had worse clinical status on admission and received poorer quality of care. Results from this study highlight that increased mortality after AMI in patients with lower SES is largely explained by patients' worse clinical status on admission. Patients with lower SES also had higher rehospitalization rates even after adjusting for clinical factors and quality of care.

Strengths of the study are its use of a national database that included patients from academic and nonacademic hospitals, assessment of quality of care measures, and ability to capture clinically relevant patient factors for adjustment. However, there are several limitations. SES was defined by self-report, which can have inherent biases (patients reporting higher income and higher education), and was determined by income and educational level, which does not include measures of wealth or occupational class that might give a more complete picture of SES. Additional behavioral factors that were not included but could have

affected mortality include diet, substance abuse, adherence to medications, and mental health conditions.

Applications for Clinical Practice

This study adds to the literature by ascribing poorer outcomes in patients with lower SES mainly to worse clinical factors at presentation rather than lower quality of care. Future interventions should target improving quality of medical care, access to care before hospitalization, and adequate follow-up care after hospitalization; however, physicians should also recognize lower SES as an indicator of worse prognosis after AMI.

—Review by Robert L. Huang, MD, MPH

References

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2. Tonne C, Schwartz J, Mittleman M, et al. Long-term survival after acute myocardial infarction is lower in more deprived neighborhoods. Circulation 2005;111:3063–70.

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