

Outcomes of Acute Myocardial Infarction in Disadvantaged Populations

Shen JJ, Wan TT, Perlin JB. An exploration of the complex relationship of socioecologic factors in the treatment and outcomes of acute myocardial infarction in disadvantaged populations. *Health Serv Res* 2001;36:711–32.

Study Overview

Objective. To examine the relationship of patients' socioeconomic status (SES) and outcome of acute myocardial infarction (AMI), paying special attention to patients with multiple unfavorable socioeconomic risk factors.

Design. Observational, cohort study.

Setting and participants. The data set was abstracted using a stratified randomized sample from patient-level hospital discharges in the Nationwide Inpatient Sample, Release 3, 1994 [1]. A total of 95,971 AMI discharges in 11 states were extracted. The states were California, Colorado, Connecticut, Florida, Kansas, Massachusetts, Maryland, New Jersey, New York, South Carolina, and Wisconsin. Other states were excluded due to incomplete socioeconomic data. Participants had a mean age of 67.6 years and 59.3% were male.

Main outcome measures. Outcome of AMI was measured by inhospital mortality with a risk adjustment methodology adapted from the California Hospital Outcomes Project [2] using a regression model. Risk factors included demographic and clinical characteristics. SES was measured using race (non-Hispanic white, African American, and Hispanic), health insurance status (Medicare, Medicaid, private insurance, and uninsured), and median income by zip code of residence. Patients in "double jeopardy" were defined as those who had inferior insurance and lived in poorer neighborhoods. Also, 2 groups of patients were compared: the "extremely unfavorable group" (uninsured or covered by Medicaid and median income lower than \$20,000) and the "extremely favorable group" (covered by private insurance and median incomes above \$40,000).

Main results. Compared with patients with health care coverage under Medicare and private insurance, uninsured AMI patients had the highest risk-adjusted mortality odds (1.33 [95% confidence interval {CI}, 1.16 to 1.53]), followed by Medicaid AMI patients (1.19 [95% CI, 1.03 to 1.38]). The double jeopardy phenomenon was not observed, probably due

to the modest association of median income by zip code areas with mortality odds. However, compared with patients who had 2 favorable SES attributes, patients who carried 2 unfavorable SES attributes had much higher mortality risk, more comorbidities, longer length of stay, and higher total hospital charges while they received fewer AMI specialized procedures. Race did not seem to be a significant factor after adjustment for other SES attributes.

Conclusion. SES is significantly related to the mortality of AMI patients. The disadvantaged patients receive fewer specialized procedures, possibly because of the greater severity of their illness and their financial barriers. The variation in mortality between patients who had favorable and unfavorable SES becomes wider when multiple socioeconomic risks are borne by the latter.

Commentary

The deleterious impact of low socioeconomic status usually has been present for a long time when patients initially present to the hospital with an AMI, and its effects are difficult to modify within the short time of a hospital stay. Shen and colleagues demonstrate the importance of insurance status as a predictor of increased mortality in this patient population. The barriers to accessing preventive and acute health care by these vulnerable populations should be considered very seriously at all levels of our society, with the understanding that solutions might not be readily available, but also with the hope that cooperative programs may help minimize their impact.

The use of large databases, retrospective data, and surrogate measures (eg, income inferred from zip code) should be considered cautiously if these data are used as evidence. Nevertheless, despite the exploratory nature of this study, its results are valuable to plan for focused studies with better methodologic strength and for development of policies aimed at enhancing our understanding of this complicated problem. It is important to note that race alone was not a significant predictor of mortality. Further study is needed to better define the specific socioeconomic indicators that predict and perpetuate poor health outcome.

Applications for Clinical Practice

Clinical evaluation and decision analysis should take into account socioeconomic factors that might predict a poor clinical outcome. At the clinician/patient level, SES should be considered in individual clinical management. At the organizational level, special services should be made readily available to allow development and implementation of processes that will help predict cost of care and assist with patient disposition to assure the best clinical outcomes.

– Review by Pedro J. Caraballo, MD

References

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2. Romano PS, Zach A, Luft HS, et al. The California Hospital Outcomes Project: using administrative data to compare hospital performance. *Jt Comm J Qual Improv* 1995;21:668-82.

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