SHORT REPORT

Differential effect of socioeconomic status on rates of invasive coronary procedures across the public and private sectors in Queensland, Australia

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Free access to health care for all Australians is enshrined in the publicly funded Medicare programme, which coexists with and subsidises the private sector. Information about equitable access under this system is scarce. In other countries with free health insurance, patients of low socioeconomic status (SES) have low rates of invasive coronary procedures (ICP): angiography, angioplasty, and bypass surgery.^{1,2} The purpose of this study was to examine whether SES has a differential effect on ICP rates across the public and private sectors in Queensland (population: 3.5 million), Australia.

METHODS

We used computerised discharge abstracts to conduct a population-based cohort study of the 3531 patients admitted to Queensland hospitals for acute myocardial infarction (AMI) during 1998. AMI patients were identified using the ICD9-CM code 410.x1: *first episode of care for a newly diagnosed myocardial infarction*. Follow up was for one year and used probabilistic matching based on Medicare number, date of birth, sex, country of birth and address of usual residence. We applied two exclusion criteria: (1) age younger than 30 years or older than 89 years, (2) discharge status of alive and length of stay less than four days. These criteria have been shown in other studies (based on computerised discharge abstracts) to be optimal for reducing the number of false positive diagnoses of AMI.³

We used proportional hazards models to compare time to ICP according to SES and public-private status. These models allowed us to adjust for the potentially confounding effect of age, sex, rurality, specialty of admitting doctor (cardiologist, general physician, non-specialist), and comorbid conditions. Data on private health insurance were not available.

SES was based on neighbourhood of usual residence. There are 446 such neighbourhoods in Queensland (median population: 5359). High SES and low SES neighbourhoods were defined as those in the top and bottom quintiles based on education and skilled employment as reported in the 1996 Australian Census.⁴ The public-private status was that for the ICP, or if no procedure was performed, it was that for majority of bed days attributed to AMI. The comorbid conditions were the same as those used in a study of AMI based on routine hospital data in Ontario.³ Rurality was based on population density and distance to large population centres.

RESULTS AND DISCUSSION

The median age was 70 years, 62.1% of participants were male, and 24.9% were treated in the private sector. During the 12 month follow up, 1250 (35.4%) patients had an angiogram, 311 (8.8%) had angioplasty and 434 (12.3%) had bypass surgery.

Private patients were more likely to have an ICP than public patients (adjusted rate ratios: angiography 2.90 (95%CI 2.57 to 3.27); angioplasty 2.37 (1.87 to 3.01); bypass surgery 3.92

(3.22 to 4.76)). These results were not surprising and have been attributed to the relatively greater capacity of the private sector.⁵

Residents of high SES areas were more likely to undergo angiography (adjusted rate ratio: 2.90 (2.57 to 3.27)) and angioplasty (1.89 (1.26 to 2.83)) than residents of low SES areas. Rates of bypass surgery were similar across the SES groups (0.90 (0.65 to 1.25)). Bypass surgery is a more invasive procedure; the clinical indications are more clearly defined than for angiography or angioplasty; consequently, there may be less scope for variation.

The SES effect for angiography and angioplasty persisted in the public system, considered separately (for example, adjusted rate ratio for angiograms for high versus low SES: 1.74 (1.37 to 2.21) but not in the private system (0.99 (0.73 to 1.33)). The SES effect in the public system is consistent with results from other countries with free health insurance and warrants further investigation.^{1,2} One plausible hypothesis is that affluent patients are more educated, articulate and demanding (and potentially more litigious) and hence more likely to receive invasive procedures than less affluent patients.

Also surprising was the lack of a SES effect in the private sector. Data on whether patients were privately insured were not available, but some private patients do not have private health insurance and would have to bear the total cost of the procedure. Even for those with private health insurance, there is some cost in the form of a co-payment. Perhaps patients who elect to be treated in the private sector are a self selected group for whom the cost of procedures is less important.

The usual caveats that are applied to this form of analysis should also be applied to this present study.⁶ In particular, the use of linked administrative data might have limited our ability to adjust for differences in baseline characteristics. Although we adjusted for age, sex, rural residence, hospital characteristics and comorbid conditions, we did not have clinical measures of the severity of the coronary artery stenosis and so could not adjust for these. However, the comorbidities we adjusted for included shock, arrhythmias and heart failure, which have been used by others as measures of severity.³ As in other analyses of this kind, neighbourhood of usual residence was used a proxy for individual socioeconomic status. This is likely to lead to an underestimate of the true effect of SES on procedure rates.⁷

COMMENT

In the free public sector in Queensland, Australia there are wide disparities in access to angiography and angioplasty according to SES. This finding adds to the growing body of international evidence that free access to healthcare does not necessarily ensure equitable access.

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