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Diversity in Cardiovascular Outcomes Among Chinese and South Asian Patients

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With combined populations of 2.8 billion people, China and the countries of South Asia, including India, Pakistan, and Bangladesh, comprise 40% of the global population of nearly 7 billion people. Immigration to North America from China and South Asia has increased substantially in recent decades. In 2000, people of Chinese descent represented 1.0% of the United States population and those of South Asian descent represented 0.8%.¹ In 2006, the corresponding proportions of the Canadian population were even higher at 4.3% and 4.2%, respectively.² With the recent growth of these ethnic groups in North America, their health risks, quality of care, and outcomes have become more important to assess.

In this issue of *Circulation*, Khan and colleagues compared the outcomes of Chinese and South Asian patients relative to white patients after acute myocardial infarction in Canada.³ Using administrative data in hospital discharge abstracts from British Columbia and the Calgary region of Alberta during 1994 through 2003, the authors applied surname algorithms to identify patients of probable Chinese or South Asian ethnicity who had a principal diagnosis of acute myocardial infarction (AMI). To identify patients who underwent cardiac catheterization and revascularization procedures within one year of an AMI and assess their coronary anatomy, they linked the cohort to established registries of cardiac procedures in each province. They also tracked overall survival with provincial vital statistics and monitored readmissions for AMI or heart failure with hospital administrative data up to 8 years after an initial AMI. While such administrative data do not provide definitive insights about mechanisms or outcomes of disease, they can often offer important clues about evolving health risks and needs in broad populations.⁴

This study had two key findings that merit further exploration. First, Chinese patients had significantly higher 30-day mortality than white patients, but long-term mortality did not differ between these two groups. Second, among patients who survived at least 30 days after an AMI, South Asian patients had significantly lower long-term mortality than white patients, despite having similar rates of readmissions for AMI and heart failure. What factors could explain these two notable findings?

Chinese and white patients in this cohort had very similar age and sex distributions but very different residential patterns, with only 6% of Chinese patients living more than 50 kilometers from the nearest hospital compared with about one-third of white patients living beyond this range. Thus, if the sickest white patients living in rural or remote areas were more likely to experience out-of-hospital deaths, this pattern may have reduced the apparent short-term mortality of white patients who were actually admitted to hospitals for an AMI.

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A more likely explanation for the 23% higher short-term odds of mortality among Chinese patients was their greater clinical severity or instability on presentation relative to white patients, as suggested by their higher rates of emergent cardiac catheterization (22.8% vs. 15.3%) and percutaneous coronary interventions (27.6% vs. 18.1% among those who underwent catheterization) during the first hospital day. If Chinese patients were more severely ill on presentation, they presumably experienced more frequent complications during the initial hospitalization. In a U.S. cohort of patients hospitalized for acute coronary syndromes that compared all Asian patients to white patients, for example, Asian patients had significantly higher rates of stroke and severe bleeding, and much of the increased bleeding risk was explained by excess dosing of anti-thrombotic therapies.⁵ Future studies of ethnic differences in AMI outcomes can shed further light on mortality differences by identifying the causes of death in study subjects and determining whether complications of treatment may have contributed to these deaths.

Chinese patients also may have delayed seeking care for their early symptoms until their myocardial damage or left ventricular dysfunction was more severe. Because the risk of coronary artery disease and AMI is much lower among Chinese adults than among white or South Asian adults, particularly at younger ages,^{6, 7} Chinese adults may be less likely to recognize chest pain or other ischemic symptoms as indicators of an AMI that requires immediate medical attention. In addition, Chinese patients may have less typical symptoms, which might cause them to delay seeking care.⁸

Language barriers and perceptions of racial discrimination may also contribute to delays in seeking care for Chinese patients. In the California Health Interview Survey during 2003 and 2005, Chinese respondents commonly reported limited English proficiency (34%) and experiences of racial discrimination (28%), and people in these groups were much more likely to report fair or poor health.⁹ In a recent study of patients with lung cancer or colorectal cancer in California, Chinese-speaking patients were much less likely than other patients to rate their quality of care as excellent, and they reported substantially worse experiences with physician communication, nursing care, and coordination of care.¹⁰

These findings underscore the importance of collecting language data when evaluating the quality of health care for different ethnic groups, especially when language barriers may be a mediator of ethnic disparities in treatment or outcomes. By expanding interpreter services and the diversity of the health-care workforce to care for emerging immigrant groups,^{11, 12} health care organizations can foster greater trust and more active engagement with doctors, nurses, and other providers of care among patients with limited English proficiency.

The second major finding of Khan et al. was the 35% lower long-term mortality among South Asian patients relative to white patients. This finding adds to a growing body of research that has assessed the outcomes of AMI among South Asian patients in South Asia,¹³ the United Kingdom,^{14, 15} and Canada.¹⁶ In another analysis of this Canadian cohort, the lower long-term adjusted mortality for South Asian patients was nearly identical for those with diabetes (38% lower) or without this condition (35% lower).¹⁷

South Asian patients in the study by Khan et al. were substantially younger than white patients, with a much lower proportion who were age 75 or older (24% vs. 36%) – an age group with a steeply increased risk of dying within several years after an AMI. Because the authors only dichotomized age at 65 years in their multivariable survival models, some of the lower mortality risk among South Asian patients might have been attenuated by a more fine-grained adjustment for age in these models.

Another possible explanation for better long-term AMI survival in younger South Asian patients could be more intensive treatment of their coronary artery disease. While Chinese

patients had the highest rates of emergent cardiac catheterization on the day of admission for AMI, Khan et al. found that South Asian patients were much more likely than Chinese or white patients to undergo cardiac catheterization in the subsequent year (51% vs. 38% and 42%, respectively). This higher rate of invasive procedures may have resulted in increased use of effective medications, such as aspirin and cholesterol-lowering drugs, and greater collaboration between primary care physicians and cardiologists after the initial hospitalization – factors which are associated with improved long-term survival after an AMI.¹⁸

As ethnic diversity continues to grow through increased immigration to Canada and the United States, physicians and other health-care providers will need to develop a more nuanced understanding of the risk factors, symptoms, response to treatment, and outcomes of expanding ethnic groups, particularly in regions or metropolitan areas where these groups are most likely to settle. Policymakers will also need more accurate data on race and ethnicity to monitor access to care and quality of care for more diverse populations.

Since 2007 Massachusetts has mandated that hospitals in the state collect patients' self-reported race, ethnicity and preferred language with standardized methods and categories,¹⁹ and this mandate has been implemented smoothly. In 2009, the U.S. Institute of Medicine called for health-care organizations to collect patients' self-reported race, ethnicity, preferred language, and English proficiency systematically to monitor and improve the quality and outcomes of care related to these important social factors.²⁰ In addition to collecting broad racial and ethnic categories such as Asian, this report also recommended the tailored collection of more granular ethnic categories, such as Chinese or South Asian, when relevant for local health-care systems. These self-reported data could then be routinely incorporated in administrative data systems and clinical registries, rather than relying on surname algorithms³ or complex linkages to Census data.¹⁴ By facilitating enhanced studies of cardiovascular outcomes in key ethnic groups, these data will provide new tools for improving the health care and outcomes of increasingly diverse populations of Canada, the United States and elsewhere.

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