

# Absence of Disparities in the Quality of Primary Diabetes Care for South Asians and Chinese in an Urban Canadian Setting

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**OBJECTIVE**—To examine whether quality of diabetes care is equitable for South Asian and Chinese patients in an urban Canadian setting.

**RESEARCH DESIGN AND METHODS**—Process and intermediate measures of quality of care were compared between 246 South Asians, 170 Chinese, and 431 patients from the general population with type 2 diabetes selected from 45 family physicians' practices.

**RESULTS**—A total of 61% of Chinese achieved A1C  $\leq 7.0\%$  versus 45% of South Asians and 49% of the general population ( $P < 0.05$ ). They were also more likely to achieve LDL cholesterol  $\leq 2.0$  mmol/L, while South Asians were more likely to achieve blood pressure  $\leq 130/80$ . There was only one significant process of care deficiency: fewer foot examinations among South Asians (34 vs. 49% for the general population,  $P < 0.01$ ).

**CONCLUSIONS**—Quality of diabetes care in a Canadian urban setting was equitable, with ethnic minorities somewhat more likely to achieve recommended targets than the general population.

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Racial and ethnic minority populations in the U.S. achieve worse health outcomes and have greater mortality than whites (1). The experience of ethnic minorities in Canada is different because of a publicly funded universal health care system that may mitigate some socioeconomic and insurance barriers to care. Canadian minorities also represent different ethnic groups, with the two largest being South Asians (from the Indian subcontinent) and Chinese (2). We examined quality of type 2 diabetes care in an urban family practice setting, comparing South Asians and Chinese with the general population.

**RESEARCH DESIGN AND METHODS**—Previous research suggests that minority patients see different practitioners than nonminority patients (3), which may confound evaluations of quality of care. Therefore, we recruited all patients from the practices of the same family physicians. We identified neighborhoods in the Toronto area where  $\geq 25\%$  of the population reported either South Asian or Chinese ethnicity in the 2006 Canadian census. Family physicians were enrolled who had been in practice for at least 3 years and who had at least 10 South Asian or Chinese diabetic patients and 10 general population diabetic patients in their practice. The general

population could not include South Asians or Chinese but could include whites or people from any other ethnic group. Other ethnic groups, the largest of which were black and Filipino, made up 24% of the population of the selected neighborhoods, similar to their proportion of the Toronto population as a whole (2).

In each participating physician's office, we randomly selected 10 South Asian or Chinese and 10 general population diabetic patients. Inclusion criteria were age  $\geq 18$  years and type 2 diabetes for  $\geq 2$  years. Trained abstractors reviewed the selected charts and collected process and intermediate measures of diabetes care. Provincial ophthalmology and optometry billing claims data were searched to determine diabetic retinopathy screening.

Mean values or proportions for each quality measure were compared between both ethnic groups and the general population. To account for patient clustering within physicians, linear and logistic regression models using generalized estimating equations were used to determine statistical significance. Models were not adjusted for age or socioeconomic status because these factors may have formed part of the causal pathway explaining disparities in quality of care. Models adjusting for baseline characteristics were tested and did not materially change the inferences of the results (not shown). All statistical analyses were performed using SAS version 9.2.

**RESULTS**—We recruited 26 physicians from neighborhoods with large concentrations of South Asians and 19 physicians from neighborhoods with large concentrations of Chinese. From these physicians, 847 eligible patients with type 2 diabetes were identified. Of these patients, 246 were South Asians and 170 were Chinese (Supplementary Table 1). Both minority populations had a greater preponderance of men than the general population. South Asians also were substantially younger (mean age 58 vs. 66 and 64 years) and were more likely to be recent immigrants (26 vs. 10 and 9%) compared with Chinese and general

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population patients, respectively. Groups did not differ by socioeconomic status or diabetes duration.

Quality of care is shown in Table 1. A greater proportion of Chinese achieved the glycemic control target of A1C  $\leq 7.0\%$  and the lipid control target of LDL cholesterol  $\leq 2.0$  mmol/L, whereas a greater proportion of South Asians achieved the blood pressure target of  $\leq 130/80$ . South Asians were less likely to receive a foot examination than the general population. Otherwise, there were no differences in quality indicators between groups.

**CONCLUSIONS**—We found virtually no differences in process measures of diabetes care between South Asians, Chinese, and the general population. For intermediate measures, the ethnic minority populations were, if anything, more likely to achieve recommended targets. Indeed, the quality of care achieved by all patients in the study was moderately high, with overall glycemic, blood pressure, and LDL cholesterol control exceeding or close to recommended targets. In contrast, American data show lower performance for virtually all measures, particularly among patients on Medicaid (4).

Most American studies of ethnic disparities in diabetes care focus on blacks and Hispanics (5–7). Several studies including Asians show narrower disparities compared with whites than for other

minorities, but these studies do not disaggregate Asian subgroups (6–8). Our findings corroborate recent California data showing similar A1C and lipid levels for South Asians and Chinese versus whites (9). Several studies from the U.K. find marked disparities in glycemic control and other intermediate measures for South Asians (10–13), although these gaps have diminished after years of quality improvement initiatives in British primary care (14). By selecting both minority and general population patients from the same family physicians' practices, our study eliminated interphysician differences between groups (3), which may have driven some of the inequity found in previous studies.

There are some limitations to our study. Important factors that could contribute to quality of care for minority patients, such as language proficiency or degree of acculturation, could not reliably be collected from family physicians' charts. In addition, patients and physicians in this study were selected from urban neighborhoods with large South Asian or Chinese populations. Physicians practicing in these neighborhoods may have had greater cultural sensitivity than those living in areas with fewer South Asians or Chinese, and minority patients in the selected neighborhoods may have had greater access to familiar ethnic foods and have had greater community social

supports to empower behavior change and healthful lifestyles. Thus, the generalizability of study findings to places with smaller minority populations, particularly in smaller cities and rural areas, is uncertain.

In conclusion, the process and intermediate measures of diabetes care in a Canadian urban family practice setting were similar between South Asians and Chinese and the general population. Further research will be required to establish the mechanisms through which equitable care was achieved in this population and how those can be translated into clinical and policy decisions affecting minority populations more broadly. In addition, methods of improving quality of care, particularly for poorly performed process measures such as foot examination or retinopathy screening, must be developed for the whole population with diabetes, regardless of ethnicity.

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B.R.S. researched data, contributed to discussion, and drafted, reviewed, and edited the manuscript. K.C.-D. researched data and reviewed and edited the manuscript. S.S.A., P.C.A., D.G.M., and J.E.H. contributed to discussion and reviewed and edited the manuscript. B.R.S. is the guarantor of this work and, as such, had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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**Table 1—Process and intermediate measures of quality of care**

	South Asian	Chinese	General population
<b>Process measures</b>			
A1C measured	93	95	92
BP measured	95	99	95
Lipid profile measured	85	88	86
Microalbumin tested	60	74	62
Foot examination	34†	66	49
Retinopathy screening	61	60	63
Attended diabetes education	8	2	6
<b>Intermediate measures</b>			
<b>Glycemic control</b>			
A1C (%)	7.4 $\pm$ 1.3	7.0 $\pm$ 1.1	7.4 $\pm$ 1.4
A1C $\leq 7.0\%$	45	61*	49
<b>BP control</b>			
Systolic BP (mmHg)	128 $\pm$ 16	129 $\pm$ 12	129 $\pm$ 16
Diastolic BP (mmHg)	77 $\pm$ 9	76 $\pm$ 8	77 $\pm$ 10
BP $\leq 130/80$	64*	64	57
<b>Cholesterol control</b>			
LDL cholesterol (mmol/L)	2.3 $\pm$ 0.8	2.2 $\pm$ 0.8	2.3 $\pm$ 0.8
LDL cholesterol $\leq 2.0$ mmol/L	42	55*	46

Data are percentages or mean  $\pm$  SD. BP, blood pressure. \* $P < 0.05$  vs. general population. † $P < 0.01$  vs. general population.

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