

Utilization of physician services for diabetic patients from ethnic minorities

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ABSTRACT

Background Diabetes is a common chronic disease, which results in significant morbidity and mortality. Although ethnic variations in disease prevalence are known, variations in the utilization of physician services for the disease (particularly in publicly funded health care systems) are uncertain.

Methods Self-reported ethnicity was determined from two population health surveys in Ontario, Canada. These data were linked to administrative data sources, including an administrative data-derived disease registry. Diabetes prevalence was determined for each ethnic group. Utilization of physician services for primary care, diabetes specialist care and eye examinations was compared among ethnic groups, adjusting for age, sex, socioeconomic status and diabetes duration.

Results There were 20 788 eligible survey respondents. Standardized diabetes prevalence was elevated for the South Asian and Black populations (11.1 and 11.0%, respectively) compared with that for the White population (5.9%). Ethnic minorities with diabetes were less likely to receive an eye examination compared with White patients (adjusted OR, 0.63; 95% CI, 0.46–0.85). The use of primary care and diabetes specialist care did not differ.

Conclusion Ethnic minorities with diabetes are less likely to receive eye examinations. This disparity in quality of care could lead to worse clinical outcomes for these patients.

Keywords diabetes, ethnicity, health services

Introduction

Diabetes is a common chronic disease, affecting a large and growing proportion of the population.¹ It results in microvascular and macrovascular complications,² and it is associated with impaired quality of life, premature mortality and significant economic costs.^{3–5} Fortunately, many pharmacological and non-pharmacological interventions have been shown to reduce diabetes complications. For example, the Danish Steno-2 trial showed that an intensive, targeted and multi-factorial intervention that included dietary changes, regular exercise, smoking cessation and pharmacological therapy led to a risk reduction for complications between 53 and 63% over 7.8 years,⁶ and a mortality reduction of 46% after a further 5.5 years of observational follow-up.⁷ Ensuring patients receive adequate medical care to implement and support these interventions is a key to improve their outcomes.

The variations in diabetes prevalence among ethnic groups are well known.^{8–10} In many western countries, minority ethnic groups have a higher prevalence of diabetes than the majority European-origin population.^{11–15} In addition, systematic reviews of smaller studies have confirmed that patients from minority ethnic groups have worse glycaemic control compared with Whites.^{16–18} However, differences in access to and utilization of physician services for diabetes care between ethnic groups are less well characterized. Since appropriate physician care is essential to implement evidence-based diabetes care, any such differences could impact patients' quality of care. Several American studies have shown inequities in dilated eye examinations between Blacks and Whites,^{19–22} but data from other health care systems and for other ethnic groups are limited.

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Canada has a multi-ethnic population. Ontario is the country's largest province and one of its most diverse, where 23% of the population are ethnic minorities.²³ This study compared physician care for people with diabetes from different ethnic groups in Ontario.

Methods

Data sources

The study used population health surveys to define self-reported ethnicity, a population-based disease registry to identify people with diabetes and health administrative data sources to evaluate physician care. Individuals were linked deterministically between all data sources through their unique health card number; hence, linkage was complete.

The self-reported ethnicity was derived from two population health surveys that provided a cross-sectional estimate of health determinants and health status in the population. The target populations were household residents, excluding populations living on aboriginal reserves, military bases and certain remote areas. In both surveys, respondents consented to linkage of their responses to administrative data using their encrypted health card number. The surveys were the 1996/97 Ontario Health Survey (the number of linked respondents in Ontario, 23 403) and the 2000/01 Canadian Community Health Survey (32 848).^{24,25}

Self-reported health surveys often underestimate the prevalence of disease.^{26,27} Therefore, patients were linked with a population-based diabetes registry derived from administrative data to determine diabetes status. The Ontario Diabetes Database (ODD) defines diabetes on the basis of the physician service claims and hospitalization records bearing a diagnosis code for diabetes. When compared against primary care chart review, the ODD was found to have at least 97% specificity.²⁸

To determine the measures of physician care, a database of service claims was used, which includes billing claims for virtually all consultations, visits and assessments by physicians and optometrists in Ontario. All physician services in Ontario are paid in full through public funding available to all residents of the province. Hence, virtually all physician care in the province is recorded in this database. Patients can freely access primary care of their own choosing, but specialist care requires referral from another physician.

Patient selection

The self-reported ethnicity was determined from the three surveys. Participants who gave a single response of White (including Latin American), South Asian, Chinese, Black,

Arab/West Asian, Filipino or Southeast Asian were selected. Other responses were not included in this study, because of inadequate numbers of respondents. Respondents aged ≤ 19 were excluded. The analysis was restricted to people living in major urban centres (with populations $> 100\,000$), to control for availability of physician care and because most ethnic minorities live in larger centres.²³

Analysis

The prevalence of diabetes in each ethnic group was determined using the number of eligible survey participants alive as of 31 December 2001 as the denominator, and the number of them who had been diagnosed with diabetes as of that date (according to the ODD) as the numerator. Prevalence in each group was age/sex standardized to the 1991 Canadian population, using the gamma distribution method to determine confidence intervals.²⁹

Among those who were alive and had diabetes as of 31 December 2001, three measures of physician care in 2002 were evaluated by a linkage with the physician service claims database:

- (i) At least two ambulatory visits for any reason with the same primary care physician during the year. Regular primary care is essential to ensure quality chronic disease management.^{30,31}
- (ii) At least one ambulatory visit with an endocrinologist or general internist during the year. In Canada, general internists provide consultative specialist care, not primary care. Specialist care has been shown to lead to higher quality diabetes care.^{32–34}
- (iii) At least one eye examination from an optometrist or ophthalmologist during the year. Regular eye examinations for diabetic patients are a key quality indicator,^{35–37} since they permit the detection of early changes of retinopathy, but there is no organized screening programme in place in Ontario. Although the actual clinical content of each patient visit was not included in the available data, most visits were with ophthalmologists who do not usually perform general eye tests or assessments of refraction.

Patients who died during 2002 were excluded.

The frequency of each outcome within each ethnic group was determined. (The Arab/West Asian, Filipino and Southeast Asian groups were aggregated to provide adequate sample size.) Each outcome was compared between the White and the ethnic minority groups using logistic regression, adjusting for age, sex, neighbourhood income level (based on a person's postal code) and diabetes duration.

Ethics

The study was approved by the institutional review board of Sunnybrook Health Sciences Centre.

Results

A total of 20 788 people who participated in at least one of the surveys were eligible for the study. The prevalence of diabetes within each self-reported ethnic group is presented in Table 1. The standardized prevalence for the South Asian and Black populations, in particular, was markedly greater than that for the White population.

Among those 20 788 people, 1610 were diagnosed with diabetes and were alive throughout 2002. Their utilization of physician services is shown in Table 2. Regular primary care use was similar between the White, South Asian, Chinese and Black populations. However, the use among other ethnicities appeared to be less. After adjustment for demographic differences and diabetes duration, there was no difference in primary care use between White patients and ethnic

minorities. Specialist care use was also similar across all ethnic groups. However, utilization of eye examinations was lower for the minority ethnic groups compared with that for the White population.

Discussion

Main findings of this study

Diabetes prevalence is higher in the South Asian and Black populations compared with that in the White population of Ontario. Prevalence in other common minority ethnic groups, including Chinese, Arab/West Asian, Filipino and Southeast Asian, was not different. Eye examination, an important quality indicator for diabetes care, was less common for ethnic minority groups compared with that for the White population, after adjusting for age, sex, socioeconomic status and diabetes duration. Two other measures of physician utilization, regular primary care and specialist care, that could influence the quality of care did not differ.

What is already known on this topic

These findings confirm an earlier Canadian study showing that diabetes prevalence is higher in people with South Asian origins, but similar to the general population in people with Chinese origins.¹¹ An American population health survey found standardized prevalence for diagnosed diabetes of 5.2% for Whites versus 11.0% for Blacks,³⁸ very similar to the prevalence reported here. The findings of this study are also consistent with American population health surveys that showed no ethnic variation in primary care utilization.³⁹ American studies have shown mixed effects for ethnicity on eye examinations: in a Veterans Affairs population, Black patients had fewer examinations than White patients,¹⁹ whereas among Medicare recipients, rates did not differ.²⁰

Table 1 Crude and age/sex standardized prevalence of diabetes in different ethnic groups

| Ethnic group | n | Crude prevalence (%) | Standardized prevalence (%) with 95% CI |
|-----------------|--------|----------------------|---|
| White | 18 517 | 7.3 | 5.9 (5.6–6.3)* |
| South Asian | 655 | 11.1 | 11.1 (8.2–14.6) [†] |
| Chinese | 540 | 5.9 | 6.6 (4.2–10.0)* |
| Black | 524 | 11.6 | 11.0 (8.1–14.6) [†] |
| Arab/West Asian | 248 | 6.0 | 3.7 (2.0–6.3)* |
| Filipino | 197 | 8.6 | 5.9 (3.2–9.9)* |
| Southeast Asian | 107 | 9.3 | 3.7 (1.6–7.3)* |

*P = not significant versus White.

[†]P < 0.05 versus White.

Table 2 Use of physician services among people with diabetes from different ethnic groups

| | White (n = 1406) (%) | South Asian (n = 72) (%) | Chinese (n = 31) (%) | Black (n = 59) (%) | Arab/West Asian, Filipino, Southeast Asian (n = 42) (%) | Adjusted OR and 95% confidence interval (minorities versus White) |
|----------------------|----------------------------|--------------------------------|----------------------------|--------------------------|---|---|
| Regular primary care | 85.1 | 87.5 | 83.9 | 86.4 | 76.2 | 1.04 (0.68–1.59)* |
| Specialist care | 20.7 | 20.8 | 16.1 | 18.6 | 16.7 | 0.79 (0.54–1.17)* |
| Eye examination | 54.7 | 33.3 | 48.4 | 44.1 | 33.3 | 0.63 (0.46–0.85) [†] |

*P = not significant.

[†]P = 0.003.

What this study adds

Virtually all previous studies examining ethnic differences in health care utilization for diabetes have been conducted in the USA. This study, in Canada, has described diabetes prevalence and health care utilization in several ethnic groups that have not been previously studied. In addition, the study is one of the first to examine utilization in a publicly funded system where all patients receive physician services without direct costs. Many of the previous studies in this area have relied on the self-reported measures of physician utilization. In contrast, this study measures the utilization directly using physician service claims, and hence provides a much more reliable measure of use.

Limitations of this study

An important limitation to this study was the small sample size of ethnic minorities in the population health surveys. There were 204 people from ethnic minorities with diabetes, which meant that the study had at least 74% power to be able to detect an absolute difference of 10% in the physician utilization measures using unadjusted chi-square testing, although less power with adjustment for confounding using logistic regression. Notwithstanding this limitation, a significant difference was still found for eye examinations.

In addition, because this study relied on administrative data sources, only limited clinical information was available to compare care between populations. For example, the clinical content of physician visits could not be ascertained, so it was uncertain whether the identified eye examinations included the dilated retinal evaluation recommended for diabetic patients. Other important quality-of-care measures, such as dietary compliance, blood pressure levels or glycaemic control, could not be ascertained.

Summary

In summary, the study found that the South Asian and Black population of Ontario have markedly elevated diabetes prevalence compared with other ethnic groups, and that eye examinations were less common for ethnic minority populations compared with that for the White population. Future research with larger samples of minority patients will be required to detect other differences in health care utilization, quality of care or clinical outcomes for minority patients. Special primary and secondary prevention programmes targeting these groups may be needed to reduce their burden of disease and prevent the complications of diabetes.

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