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Original Research

## Self-Management, Health Service Use and Information Seeking for Diabetes Care among Black Caribbean Immigrants in Toronto

 Ilene Hyman PhD<sup>a,\*</sup>, Enza Gucciardi PhD<sup>b</sup>, Dianne Patychuk MA<sup>c</sup>, Joanna Anneke Rummens PhD<sup>d</sup>,  
 Yogendra Shakya PhD<sup>e</sup>, Dragan Kljucic MA<sup>d</sup>, Mehreen Bhamani MD, MSc<sup>b</sup>, Fedaa Boqaileh RD<sup>b</sup>
<sup>a</sup>University of Toronto, Toronto, Ontario, Canada<sup>b</sup>Ryerson University, Toronto, Ontario, Canada<sup>c</sup>Steps to Equity, Toronto, Ontario, Canada<sup>d</sup>Hospital for Sick Children, Toronto, Ontario, Canada<sup>e</sup>Access Alliance Multicultural Health and Community Services, Toronto, Ontario, Canada

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## ABSTRACT

**Objective:** The objective of this research was to explore self-management practices and the use of diabetes information and care among Black-Caribbean immigrants with type 2 diabetes.

**Method:** The study population included Black-Caribbean immigrants and Canadian-born participants between the ages of 35 to 64 years with type 2 diabetes. Study participants were recruited from community health centres (CHCs), diabetes education centres, hospital-based diabetes clinics, the Canadian Diabetes Association and immigrant-serving organizations. A structured questionnaire was used to collect demographics and information related to diabetes status, self-management practices and the use of diabetes information and care.

**Results:** Interviews were conducted with 48 Black-Caribbean immigrants and 54 Canadian-born participants with type 2 diabetes. Black-Caribbean immigrants were significantly more likely than the Canadian-born group to engage in recommended diabetes self-management practices (i.e. reduced fat diet, reduced carbohydrate diet, non-smoking and regular physical activity) and receive regular A1C and eye screening by a health professional. Black-Caribbean immigrant participants were significantly more likely to report receiving diabetes information and care through a community health centre (CHC) and nurses and dietitians than their Canadian-born counterparts.

**Conclusions:** CHCs and allied health professionals play an important role in the management of diabetes in the Black-Caribbean immigrant community and may contribute to this group's favourable diabetes self-management profile and access to information and care. Additional research is necessary to confirm whether these findings are generalizable to the Black-Caribbean community in general (i.e. immigrant and non-immigrant) and to determine whether the use of CHCs and/or allied health professionals is associated with favourable outcomes in the Black-Caribbean immigrant community as well as others.

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## R É S U M É

**Objectif :** L'objectif de cette recherche était d'examiner les pratiques individuelles de prise en charge, des soins ainsi que le recours aux informations sur le diabète de type 2 auprès des personnes immigrantes issues des Caraïbes.

**Méthode :** La population à l'étude incluait des personnes immigrantes des Caraïbes ainsi que des personnes nées au Canada âgées entre 35 et 64 ans vivant avec le diabète de type 2. Les participants furent recrutés dans des centres de santé communautaires (CSC), des centres d'enseignement sur le diabète, des cliniques de diabète en milieu hospitalier, de l'Association canadienne du diabète et des organismes d'aide aux immigrants. Un questionnaire structuré a été utilisé pour recueillir des données démographiques ainsi que des informations liées au statut diabétique, aux pratiques individuelles de prise en charge, des soins ainsi que le recours aux informations sur le diabète de type 2.

**Résultats :** Les entrevues ont été menées auprès de 48 personnes immigrantes des Caraïbes et de 54 personnes nées au Canada ayant le diabète de type 2. Les personnes issues des Caraïbes étaient

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\* Address for correspondence: Ilene Hyman, PhD, 215 Howland Ave, Toronto, Ontario M5R 3B7, Canada.

E-mail address: [i.hyman@utoronto.ca](mailto:i.hyman@utoronto.ca).

significativement plus susceptibles que le groupe né au Canada d'adopter les pratiques individuelles de prise en charge du diabète, tel que recommandé, notamment en ce qui concerne un régime faible en gras et en glucides, le tabagisme limité et des activités physiques sur une base régulière. Les personnes immigrantes des Caraïbes étaient également plus à même de faire les de l'A1c ainsi que de passer un examen ophtalmologique. Les personnes immigrantes des Caraïbes ont rapporté plus fréquemment, et ce de façon significative par rapport aux personnes nées au Canada, de recourir aux informations sur les soins liés au diabète de type 2 auprès d'un centre de santé communautaire (CSC) ainsi qu'auprès d'infirmières et de diététistes.

*Conclusions* : Les CSC et les professionnels paramédicaux jouent un rôle important dans la prise en charge individuelle du diabète de type 2 auprès de communautés immigrantes au Canada, favorisant ainsi un meilleur contrôle de cette condition chronique par les personnes elles-mêmes. Il serait important de poursuivre les études sur la contribution des professionnels de la santé ainsi que des centres communautaires pour examiner la prise en charge individuelle du diabète de type 2 des personnes immigrantes de façon générale.

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## Introduction

Diabetes is a metabolic disease of major significance due to its increasing prevalence across the globe and its adverse effects on the life expectancy and quality of life (1). It is estimated that the number of people diagnosed with type 2 diabetes will increase by 50% over the next 50 years to reach 438 million, or 8% of the population worldwide (2). In 2009, the estimated prevalence of diabetes in Canada was 6.8%, an increase of 230% from 1998 (3). The prevalence of diabetes is rapidly increasing among Canadian immigrants (4) with pronounced variations across ethnicity and country of origin (5,6). Immigrants from South Asia, Latin America, the Caribbean and sub-Saharan Africa have a 2- to 3-times greater risk of developing diabetes than their counterparts in the general population (7). Several studies suggest that more research is necessary regarding Canadian immigrants with type 2 diabetes in order to self-manage, prevent further complications and provide health care services to this population (8–10). The aim of this paper is to examine diabetes self-management practices and access to diabetes information and care among Black-Caribbean immigrants with type 2 diabetes residing in Toronto, Ontario, Canada.

Self-management practices and regular diabetes care can prevent health complications that may arise as a result of uncontrolled diabetes. Self-management activities include blood glucose monitoring, regular foot checks, smoking cessation, regular physical activity and the adoption of reduced fat and carbohydrate diets (11,12). While American studies have identified significant ethno-racial variation in adherence to diabetes self-management activities (13–15), little research has been conducted in Canada. In 1 study using data from the Canadian Community Health Survey, Grant and Retnakaran (16) concluded that Canadian immigrants with diabetes were significantly less likely to perform regular foot checks and to smoke than their non-immigrant counterparts; however, no significant differences were observed in self-monitoring of glucose or physical activity levels. Nevertheless, this study did not consider the heterogeneity that exists within the Canadian immigrant population by country of origin, length of stay, ethno-racial status or other social markers. A Toronto-based study concluded that recent racialized immigrants from Pakistan, Bangladesh, Sri Lanka and China were more likely to adopt diabetes self-management practices, including enhanced physical activity, smoking cessation, glucose and foot checks and reduced dietary carbohydrates, than the Canadian-born control reference group (17).

Recommended regular diabetes care includes glycated hemoglobin (A1C) testing and foot and eye screening by a health professional (18). However, it is well documented that immigrants and racialized populations experience multiple and intersecting barriers to health care internationally and in Canada (i.e. cultural, financial, linguistic and systemic) (10). A study conducted in the

United Kingdom identified several barriers associated with reduced access to diabetes care among Caribbean immigrants (19). This included distrust of doctors and Western medicine, health professionals' lack of cultural sensitivity and knowledge about the Caribbean dietary preferences and a lack of awareness of diabetes-related complications (19). Less research has examined access to diabetes care amongst immigrants residing in Canada. Grant and Retnakaran (16) also did not find significant differences between immigrants and non-immigrants in rates of annual glycated hemoglobin (A1C) testing, foot examination by a physician, urine protein testing or eye examination. Using data from the 1996/97 Ontario Health Survey, 2000/01 CCHS linked with the Ontario Diabetes Database and OHIP data, Shah established that Caucasian, Chinese, Black, South Asian and other ethnic groups were similar in their access to regular primary care and specialist care; however, odds for receiving an eye exam was significantly lower for minority ethnic groups (20).

Access to health information from a variety of sources (e.g. health professionals, family and friends) facilitates the adoption of self-management practices and regular diabetes care (18). Little research has been completed to examine how health information seeking among Canadian immigrants. A recent study of newcomers with diabetes concluded that this group was significantly more likely to rely on family and friends for diabetes information than their Canadian-born counterparts (17).

Building on our previous research examining the experiences of recent racialized immigrants with diabetes, the aim of this research is to explore self-management practices, health services use and information seeking for diabetes care in a more established racialized immigrant community, the Black-Caribbean immigrant community in Toronto.

## Methods

This study employed a cross-sectional research design. The study population included Black-Caribbean immigrants and Canadian-born participants between the ages of 35 to 64 years with a self-reported type 2 diabetes diagnosis in the Greater Toronto Area. Sample sizes and eligibility criteria were pre-determined by the Public Health Agency of Canada to ensure consistency with other countries participating in an international study lead by the International Centre for Migration and Health (ICMH) on the effects of migration and diabetes. In the absence of an available population sampling frame, study participants were recruited using the convenient sampling technique from community health centres (CHCs), diabetes education centres, hospital based diabetes clinics, the Canadian Diabetes Association, immigrant-serving organizations, community events (e.g. Caribana) and local businesses (e.g. pharmacies, barbershops). All

eligible participants were contacted by a member of the research team and provided with study details including its purpose, risks and benefits. Written consent was obtained from all participants agreeing to take part in the study. Ethics approval was obtained from the University of Toronto, Ryerson University, Mount Sinai Hospital and St. Michael's Hospital in Toronto, Ontario.

### Data Collection and Study Variables

Data were collected using a structured questionnaire developed by the International College of Meditation & Healing (International Center for Migration and Health [Geneva], Victoria, Australia) and modified for the Canadian context. Members of the research team and a community advisory group comprised of representatives of immigrant-serving organizations, diabetes education centres and community health centres reviewed the questions in a sequential basis. Questions deemed irrelevant or unnecessary were subsequently deleted from the final copy. Questions using European terminology (e.g. public hospitals) were modified. Questions related to underemployment, low income, health beliefs, food insecurity, etc, deemed relevant and appropriate to Canadian knowledge users, were, therefore, added.

Sociodemographic variables included age (range, 35 to 64 years), sex (male, female), living with spouse/partner (yes, no), education (college or university degree or higher [yes, no]), employment status (employed, unemployed not looking for work, unemployed looking for work), employed in a permanent position (yes, no), employed in a position that reflects professional credentials (yes, no), household income (<\$50,000 & \$50,000 or over) and household dependents (< 3, 3 or >). Age was analyzed as a continuous variable, whereas all other sociodemographic variables were categorical. Employment status was defined as employed full time, part-time or self-employed.

Three variables were used to describe the severity of diabetes: self-reported diabetes under control, history of high blood pressure and obesity risk. Participants were asked to answer “yes” or “no” to the following questions: Is your diabetes under control? Do you have a history of high blood pressure? Obesity risk was determined based on categories of body mass index (BMI) calculated using the participants height, weight and waist circumference and categorized as: obese/overweight, normal weight underweight.

Variables to assess diabetes self-management practices were derived from practices described in the 2013 Canadian Diabetes Association Clinical Practice Guidelines for the Prevention and Management of Diabetes (5). Participants were asked to respond “daily/weekly” or “not daily/weekly” to the following questions: How often do you usually have your glucose checked? How often do you usually have your feet checked? They were also asked to respond “yes” or “no” to their current smoking status and whether they are physically active for at least 30 minutes per day. Lastly, participants were asked to answer “a great deal or moderately” or “only a little or not at all” to the following questions: During the past 12 months, to what extent have you tried to reduce dietary fat? During the past 12 months, to what extent have you tried to reduce carbohydrates?

Variables to assess the utilization of health services for diabetes care included the following questions: In the past 12 months, how often has a healthcare professional tested you for hemoglobin A1C [every 3 months, not every 3 months]? In past 12 months, has a healthcare professional examined your feet [yes, no]? Have you ever had an eye exam for diabetes [yes/ever, never]?

The usual source(s) of diabetes care was identified with the question: Where and from whom you receive your diabetes care? The following options were provided as well as an open-ended response category medical doctor's office [yes, no], community health centre [yes, no], diabetes education centre [yes, no] and hospital [yes, no].

The usual source(s) of diabetes information was determined using the following question: Who provides you with information about managing your diabetes? The following options were provided as well as an open-ended response category (physician [yes, no], dietician [yes, no], nurse [yes, no], family or friends [yes, no], diabetes association [yes, no], Internet [yes, no]).

Participants were interviewed in English using computer-assisted personal interviewing (CAPI) techniques by trained interviewers to ensure data efficiency and quality. All data were collected and validated using SPSS Data Entry Builder 4.0 (SPSS Inc. Chicago, IL, USA).

### Statistical analysis

Data were analyzed using SPSS analytical software 19.0 (SPSS Inc.). Bivariate analyses (*t*-test, chi square test, Fisher's exact test) were performed to compare the rate of self-management practices, use of health services for diabetes care and sources utilized for diabetes management between the Black-Caribbean immigrants and Canadian-born group. Variables with *p*-values of <0.05 were considered significant upon analysis.

### Results

A total of 102 participants with type 2 diabetes participated in the study, including 48 Black-Caribbean immigrants and 54 Canadian born. Approximately 50% of the Black-Caribbean immigrant group was born in Jamaica, 16% of the sample originated from Trinidad and Tobago, 10% from St. Vincent and 14% from other Caribbean island countries. The vast majority of Black-Caribbean immigrants had lived in Canada more than 10 years and 53% had lived in Canada for more than 20 years. Only 25% of the Black-Caribbean immigrant group had lived in Canada for less than 10 years. The vast majority (75%) of the Canadian-born group identified as “White”; but this group also included persons of Aboriginal (4), Black (4), North African (1), Eastern European (1) and other origins (3).

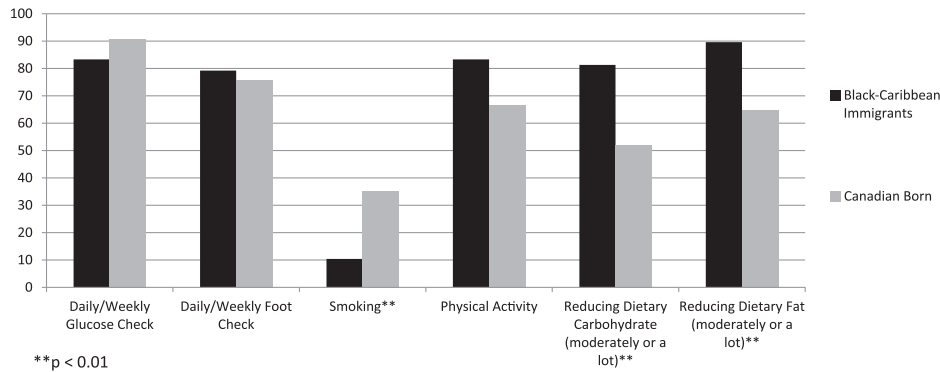
The sociodemographic profile of the study participants is presented in Table 1. The Black-Caribbean immigrants and Canadian-born participants were similar with respect to age (54.6±8.2 vs. 52.3±8.3), sex (35% vs. 52%), living with a partner (42% vs. 35%) permanent employment (74.2% vs. 94.1%), household income < \$50,000 (64.1% vs. 66.7%) and more than 3 dependents (44.4% vs.

**Table 1**  
Sociodemographic and Severity of Diabetes Profile: Black-Caribbean Immigrant and Canadian-Born Study Groups

Variable	Black Caribbean immigrants n=48	Canadian-born n=54	p-value
Age (mean)	54.6±8.2	52.3±8.3	0.163*
% male	35.4	51.9	0.095
% living with spouse/partner	41.7	35.2	0.501
% college/university degree or higher	25.0	50.0	0.001
% Employed	61.7	29.6	0.002
% with permanent employment	74.2	94.1	0.131
% without a job that reflects credentials	38.7	0	0.004†
% household income < \$50,000	64.1	66.7	0.797
% with 3 or more dependents in household	44.4	32.6	0.252
% with diabetes under control	74.5	78.8	0.606
% with history of high blood pressure	75.0	64.8	0.264
Obesity risk			
% obese/overweight	86.4	84.6	0.809
% normal weight	13.6	15.4	
% underweight	0.0	0.0	

\* *t*-test.

† Fisher exact test.



**Figure 1.** Diabetes self-management practices: Black-Caribbean immigrant and Canadian-born study groups.

32.6%). A significantly higher proportion of the Canadian-born group had a college or university degree as compared to the Black-Caribbean group (50% vs. 25%  $p=0.001$ ). In contrast, the Black Caribbean group was twice as likely to be employed (full time, part-time or self-employed) as the Canadian-born group (61.7% vs. 29.6%  $p=0.002$ ). A significantly higher proportion of the Black-Caribbean immigrant group also reported that they were underemployed (38.7%, 0%,  $p<0.004$ ).

With respect to the severity of diabetes in the 2 groups, a similar proportion of participants in the Black-Caribbean and Canadian-born groups reported that their diabetes was under control. Moreover, the obesity risk between the 2 groups was not statistically significant (Table 1).

Figure 1 compares the frequency of diabetes self-management practices between the Black-Caribbean immigrant and the Canadian-born participants. The 2 groups were similar with respect to the proportion of Caribbean immigrant and Canadian-born participants who regularly checked their blood glucose (83.3% vs. 90.7%) and feet (79.2% vs. 75.9%). A significantly higher proportion of the Black-Caribbean immigrant group reported reducing their dietary fat (89.6% vs. 64.8%  $p=0.003$ ) and carbohydrate intake (81.3% vs. 51.9%  $p=0.002$ ) compared to the Canadian-born group. The Canadian-born group was significantly more likely to report smoking cigarettes than the Black-Caribbean group (35.2% vs. 10.4%  $p=0.003$ ). Black-Caribbean immigrants were more likely than the Canadian-born group to report being physically active (83.3% vs. 66.7%), and this difference approached significance ( $p=0.054$ ).

Figure 2 displays sources of diabetes care and health service utilization in Black-Caribbean immigrants and Canadian-born group. Compared to the Canadian-born group, a significantly higher proportion of Black-Caribbean immigrants reported ever having had their eyes examined by a health professional (91.7% vs. 75.9%  $p=0.033$ ) and regular A1C level testing every 3 months (45.8% vs. 24%,  $p=0.043$ ) as per recommended CDA guidelines. There was no significant difference between the groups with respect to having had a regular foot exam (72.9% vs. 66.7%).

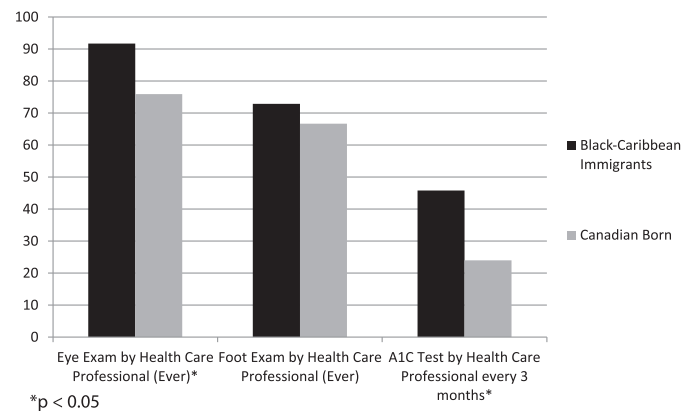
Table 2 profiles the usual sources of diabetes care and information in Black-Caribbean immigrant and Canadian-born groups. Most participants reported receiving their diabetes care from a doctor's office. This proportion was similar in both groups (66.7% vs. 81.5%). However, the Canadian-born group was significantly more likely to report receiving diabetes care from hospitals (53.7% vs. 22.9%  $p=0.001$ ), and the Black-Caribbean immigrant group was significantly more likely to report receiving care from community health centres (45.8% vs. 18.5%  $p=0.003$ ). A higher proportion of the Black-Caribbean immigrant group also reported receiving diabetes care from a nurse educator than the Canadian-born group (43.8% vs. 22.2%  $p=0.020$ ). There were no significant differences between the 2 groups in their use of other diabetes care resources, such as

diabetes education centres (18.8% vs. 16.7%). In terms of sources of information used for diabetes management, the Black-Caribbean immigrant group was more likely to report obtaining diabetes-related information from nurses (47.9% vs. 24.1%  $p=.012$ ) and dietitians (64.6% vs. 40.7%  $p=0.016$ ) compared to the Canadian-born group.

## Discussion

Study findings provide important insights into the self-management practices, use of health services and information seeking for diabetes care among Black-Caribbean immigrants in Toronto.

Black-Caribbean immigrants were significantly more likely to engage in positive self-care behaviours to control their diabetes (such as consumption of low fat and low carbohydrate diets and not smoking) compared to the Canadian-born group. Similar to that of the Canadian-born group, the proportion of Black-Caribbean immigrants who conducted regular glucose and foot checks was high. These findings are consistent with previous research on self-management practices among recent immigrants with diabetes in Toronto (17); they differ, however, from United Kingdom and other Canadian studies suggesting that ethno-racial and immigrant groups are less likely to engage in health-enhancing behaviours, such as healthy diets and regular physical activity, compared to non-racialized or non-immigrant populations (21,22). Our results that a high proportion of Black-Caribbean immigrants have had their eyes examined and had regular A1C checks every 3 months suggest that Black-Caribbean immigrants in Toronto do not



**Figure 2.** Use of health services for diabetes care: Black-Caribbean immigrant and Canadian-born study groups.

**Table 2**  
Main sources of diabetes care and Information: Black-Caribbean immigrant and Canadian-born study groups

Category	Main source	Black-Caribbean immigrants n=48	Canadian born n=54	p-value
Main source of diabetes care	Hospitals	22.9%	53.7%	0.001
	Medical doctor's office	66.7%	81.5%	0.087
	Community health centre	45.8%	18.5%	0.003
	Diabetes education centre	18.8%	16.7%	0.783
Main provider of diabetes care	Regular family doctor	89.6%	83.3%	0.360
	Specialist	35.4%	40.7%	0.580
	Social worker	2.1%	1.9%	1.000*
	Alternative health practitioner	2.1%	7.4%	0.367*
	Dietician	50%	38.9%	0.259
	Nurse educator	43.8%	22.2%	0.020
Main source of information about managing diabetes	Doctor	89.6%	96.3%	0.249*
	Nutritionist/dietician	64.6%	40.7%	0.016
	Nurse	47.9%	24.1%	0.012
	Family	22.9%	27.8%	0.574
	Friends	12.5%	13%	0.944
	Diabetes association	25%	24.1%	0.914
	Internet	27.1%	29.6%	0.776

\* Fisher exact test.

experience greater access barriers to diabetes health care than their Canadian-born, predominantly non-racialized counterparts.

Findings from this study may be surprising to some as the Caribbean population in Toronto is often considered to be a high-risk community characterized by immigration and racialization. According to data from the 2006 Census, 54% of Caribbean immigrants in Toronto were born in Jamaica, 26% in Trinidad and Tobago and the rest from other Caribbean countries. However, the Caribbean immigrant community itself is well established with 64% of immigrants having lived in Canada more than 15 years, and only 9.2% in Canada 5 years or less compared to 22.5% of the rest of the immigrant population. Furthermore, employment and labour force participation rates are higher for Caribbean immigrants than for other immigrant groups and similar to those of the Canadian-born population. Nevertheless, non-recent Caribbean immigrants (more than 10 years) have higher unemployment and low income rates than other non-recent immigrants and the Canadian-born population.

Explanations for our positive findings cannot be directly ascertained from our data; however, we propose that the high use of CHCs among the Black-Caribbean immigrant sample compared to the Canadian born may play a role in these favourable outcomes. In Ontario, CHCs provide a wide range of health and social services, including access to various health care providers, social workers and community outreach initiatives and workshops (23,24). CHCs follow a model that promotes accessible, community governed and interdisciplinary care that is grounded in a community development approach (24,25). CHCs also have a long history of working with people who are disadvantaged, and whose needs go beyond basic healthcare, as in the case of low-income or marginalized communities who may face multiple intersecting financial, linguistic, cultural and systemic barriers to care (23,24,27). Healthcare professionals practising in CHCs may have a better understanding of the social determinants of health including culture, language, diets, behaviours and traditions of the communities they serve, as compared to traditional sources of diabetes care, such as hospitals or outpatient clinics (25,26). Professionals practising in CHCs have been found to have high community orientation scores, indicating that they are able to recognize and address social and environmental determinants of health through knowledge of the client communities as well as actions and partnerships at the community level (28).

There is growing evidence that CHCs provide and promote a good model of care for patients with chronic diseases such as diabetes. For example, a recent study reported in the Ontario Health Quality Monitor showed that 30% of patients with diabetes

receiving primary care from CHCs received recommended care, compared to only 4% of patients receiving care from a fee-for-service practitioner (29). It is unlikely that income alone was a determinant of CHC use because the proportion of low income was similar in both groups. Our findings suggest that the availability and accessibility of CHCs in Ontario play a significant role in the self-management of diabetes and in the recommended use of health services in the Black-Caribbean immigrant population in Toronto.

#### Study limitations

The use of a community-based sampling strategy, a non-random sampling technique and a small sample size contribute to potential bias threatening validity and the generalizability of results to all Black-Caribbean immigrants with type 2 diabetes in Toronto.

Sex and length of stay in Canada, important determinants of health and access to care among immigrants (30,31), could not be examined due to small sample sizes. It is possible that our findings reflect the experiences of the Black-Caribbean community per se rather than the subset of Black-Caribbean immigrants, as studies suggest that there is no difference in rates of health behaviours and healthcare utilization between non-recent immigrants (defined as 20 or more years in Canada) and the Canadian-born population (31,32). There may also have been bias associated with the use of self-reporting. However, there was no evidence that the severity of diabetes, as measured by the proportion of each group reporting if their diabetes was under control, history of high blood pressure and BMI, all of which may be associated with self-management and use of diabetes information and care, differed between the 2 groups.

#### Conclusions

The findings of our study suggest a favourable profile of diabetes self-management and access to diabetes information and care in the Black-Caribbean immigrant community in Toronto compared to the Canadian-born population. Given that this group was more likely to access healthcare from CHCs, we may tentatively conclude that this is a good model of care for this group. However, more research is necessary to confirm whether the use of CHCs and/or allied health professionals, such as nurse educators, nurses and dieticians, is associated with favourable outcomes in the Black-Caribbean immigrant and other communities and to determine whether or not these findings are generalizable to the Black-Caribbean community in general (i.e. Canadian born) and other communities. Further research is also warranted to validate the

study findings with multivariate analysis to examine relationships among key study variables while adjusting for sociodemographic factors.

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### Author Disclosures

The authors do not have any conflicts of interest to disclose.

### Author Contributions

Ilene Hyman and Enza Gucciardi were the Principal Investigators who conceptualized and provided leadership on the study and prepared the final paper. Dragan Kljucic assisted with the data analysis and interpretation and reviewed the final paper. Yogendra Shakya, Dianne Patychuk and Joanna Anneke Rummens, were co-investigators on the study and provided input to the study design, literature review, data analysis and interpretation of findings and reviewed the final paper. Mehreen Bhamani and Fedaa Boqaileh were research assistants who assisted with the literature review and data analysis and provided a preliminary draft of the paper.

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