Barriers to appropriate diabetes management among homeless people in Toronto

Recherche

Research

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Abstract

Background: Homeless people are more likely to have chronic medical conditions and to encounter barriers to health care than the general population. In this study we identify barriers to appropriate disease management among homeless adults with diabetes mellitus in Toronto.

Methods: People with diabetes were surveyed at homeless shelters in Toronto. Information was obtained on demographic characteristics, diabetes history, access to health care, substance abuse and mental illness. Participants' descriptions of the difficulties they experienced in managing their diabetes were analysed qualitatively. Hemoglobin A_{1c} levels were used to assess adequacy of glycemic control.

Results: Fifty people completed the survey (response rate 83%). Of the respondents 82% were male and 64% were white. Type 2 diabetes had been diagnosed in 86%, with 62% of all participants taking oral agents alone and 28% taking insulin alone. Overall, 72% of the participants reported experiencing difficulties managing their diabetes: the most common were related to diet (type of food at shelters and inability to make dietary choices, reported by 64%) and scheduling and logistics (inability to get insulin and diabetic supplies when needed and inability to coordinate medications with meals, reported by 18%). Although alcohol use, cocaine use and mental health problems were common, few respondents cited these issues as barriers to diabetes management. According to Canadian Diabetes Association guidelines, glycemic control was inadequate in 44% of the people tested.

Interpretation: In Toronto, most homeless adults with diabetes report difficulties managing their disease, and poor glycemic control is common.

Homelessness is a growing problem in Canadian cities. In Toronto almost 26 000 people used homeless shelters in 1996.[1] Homeless people are more likely to have chronic medical conditions[2–5] and to face barriers to appropriate disease management[6–10] than the general population. Most studies describing these barriers have been conducted in the United States, where the vast majority of homeless people lack health insurance.[9] The applicability of these data to the Canadian setting is therefore limited.

Diabetes mellitus is a chronic condition that offers a unique opportunity to examine health care access and disease management among homeless people. The prevalence of diabetes is about 3% in Toronto's homeless population.[5] Diabetes management depends on numerous factors, including regular medical care, patient education, drug therapy, dietary modification and self-monitoring of blood glucose levels. We undertook this study to identify barriers to appropriate diabetes management among homeless adults in Toronto. Hemoglobin A_{1c} levels were used as an objective measure of the adequacy of glycemic control.

Methods

Between December 1998 and July 1999 we surveyed homeless adults in Toronto with a diagnosis of diabetes. We recruited people at all 18 shelters for single adults in Toronto (maxi-

mum nightly capacity 1250 men and 350 women). The mean age of shelter residents is 36 years for men and 37 years for women; about 25% of shelter users stay for 1 or 2 nights, and 17% remain for a year or longer.[1] We did not recruit subjects at shelters for youths or families or at 2 small shelters for people with HIV infection.

We asked shelter staff members to identify residents with diabetes and invite them to participate in the study. At 3 shelters on-site nursing staff were aware of residents with diabetes. Many shelters encourage or require people who take prescription medications to store them with staff, who could therefore identify those taking medications for diabetes. At shelters where residents undergo an admission intake interview, staff would often elicit a history of diabetes. Posters placed in shelters encouraged people with diabetes to contact staff. At 2 large shelters researchers were allowed to approach people at random in common areas and ask them if they had diabetes.

After written informed consent was obtained, participants completed a survey and had the option of providing a blood sample for hemoglobin A_{1c} testing. Those who provided a blood sample received $5. Researchers administered the survey in a face-to-face interview lasting about 30 minutes. Demographic information on age, race, income, education and duration of the current episode of homelessness was recorded. A complete diabetes history was obtained. Information was also obtained on other chronic health conditions, access to health care, drug abuse, previously diagnosed mental illness and history of hospital admission because of psychiatric reasons. The CAGE questionnaire was used to screen for alcohol abuse.[11]

The survey included a set of 5 questions designed to assess whether a homeless person is experiencing difficulties obtaining the necessities of life.[10] The person is asked how often in the last 30 days he or she had difficulty finding shelter, enough food to eat, clothing, a place to wash or a place to use the bathroom. A response of "sometimes" or "usually" to any of the 5 questions was considered positive.

Potential barriers to appropriate diabetes management were assessed using open-ended and closed questions. Early in the interview participants were asked "Do you experience difficulties in managing your diabetes?" and "Does being homeless make it harder for you to manage your diabetes?" People were asked to expand freely, and responses were transcribed verbatim. After these comments were elicited, the interviewer asked a series of closed questions about specific potential barriers to diabetes management.

Free-response comments about difficulties managing diabetes were entered into QSR NUD*IST, a computer program for qualitative data analysis (Sage Publications Software, Thousand Oaks, CA). We examined the content of each comment and grouped statements into meaningful and coherent categories. A person's comments could be classified under more than one category.

Blood samples were obtained for hemoglobin A_{1c} testing and refrigerated before analysis using standard laboratory techniques. In keeping with Canadian Diabetes Association guidelines, inadequate glycemic control was defined as a hemoglobin A_{1c} level greater than 140% of the upper limit of normal (reassessment and readjustment of therapy were considered mandatory for patients above this threshold).[12] The χ^2 goodness-of-fit test was used to compare the distribution of hemoglobin A_{1c} levels among the participants with type 2 diabetes and published data for adults with type 2 diabetes in the US general population.[13] In exploratory analyses, the χ^2 test was used to identify associations between demographic or clinical factors and inadequate glycemic control, at a significance level of $p < 0.05$.

The St. Michael's Hospital Research Ethics Board approved the research protocol. Administrators at each shelter gave permission for the study to be conducted.

Results

Sixty people with diabetes were identified at 11 homeless shelters, of whom 50 agreed to participate (response rate 83%). Characteristics of the participants are shown in Table 1. The median age was 49 years, and the median monthly income was $516. During the month before the survey 40% of the participants had experienced difficulties obtaining the necessities of life. CAGE scores of 3 to 4 (strongly suggestive of alcoholism) were found in 38% of the subjects. A previous diagnosis of depression, manic-depressive illness or schizophrenia was reported by 40% of

Table 1: Characteristics of study participants at homeless shelters in Toronto

Characteristic	No. (and %) of subjects
Age, yr	
23–39	6 (12)
40–59	38 (76)
60–75	6 (12)
Sex	
Male	41 (82)
Female	9 (18)
Race	
White	32 (64)
Black	8 (16)
Aboriginal/Native Indian	5 (10)
Asian	3 (6)
Other	2 (4)
Education	
Completed high school	19 (38)
Duration of current episode of homelessness	
< 6 mo	20 (40)
6 mo–1 yr	16 (32)
> 1 yr	14 (28)
Difficulties obtaining necessities of life	20 (40)
CAGE score*	
0	24 (48)
1–2	7 (14)
3–4	19 (38)
Cocaine use within past year	11 (22)
Heroin use within past year	2 (4)
Major mental illness	20 (40)
History of hospital admission because of psychiatric reasons	13 (26)

*The CAGE score is equal to the number of affirmative responses to the following questions: Have you ever felt the need to Cut down on your drinking? Have people Annoyed you by criticizing your drinking? Have you ever felt Guilty about your drinking? Do you drink in the morning for an Eye-opener?

the group. The diabetes history of the participants is shown in Table 2. The age at which diabetes was diagnosed ranged from 10 to 73 years (median 44 years).

Overall 72% of the participants reported experiencing difficulties managing their diabetes. Qualitative analysis of free-response comments revealed that most of the difficulties could be classified into a limited number of categories (Table 3). More than half of the group (64%) reported difficulties and concerns with the diet available at shelters: the most commonly mentioned issues were excessive amounts of starch and sugars (cited by 14%), relatively few fruits and vegetables (cited by 12%) and large amounts of fat (cited by 8%). Others stated, in more general terms, that meals at shelters were not appropriate for people with diabetes. A lack of choice in their diets was reported by 16% of the participants, who typically described their options as eating the food provided, even when it was ill-suited for people with diabetes, or simply forgoing most of their meal. Typical comments are quoted from 3 individuals: "The food in the shelter has a lot of fat and is high in carbohydrate. I can't control my diet here anyway, so I don't bother measuring my blood sugar." "I have no choice [in my diet] at the shelter, so I skip a large proportion of each meal." "The diet here has a lot of starch, very little vegetable, ... lots of gravy and sauces. I can't choose proportions; I throw out half the meal."

Table 2: Diabetes history of study participants

Characteristic	No. (and %) of subjects
Diabetes type	
Type 1	7 (14)
Type 2	43 (86)
Time since diagnosis of diabetes, yr	
< 1	9 (18)
1–5	19 (38)
> 5	22 (44)
Current medications for diabetes	
Oral agents	31 (62)
Insulin	14 (28)
Oral agents plus insulin	1 (2)
None	4 (8)
Blood glucose monitoring	
Currently possesses self-monitoring unit	21 (42)
Currently uses self-monitoring unit	17 (34)
Currently uses self-monitoring unit at least once daily	12 (24)
Health care for diabetes	
Sees a physician regularly for diabetes care	40 (80)
Has seen this physician within the last 2 months	38 (76)
Has received dietary instruction for diabetes	36 (72)

The second major category of difficulties involved scheduling and logistic issues (Table 3). Representative comments are quoted from 2 individuals: "I can't schedule anything. I must revolve around the shelter schedule, so nothing is consistent." "I can't time my insulin with my food; I'm supposed to take insulin half an hour before my meals and usually I can only get it 10 minutes before."

Shelter residents taking insulin face particular problems. Because of concerns about injection drug use, some shelters forbid residents to possess needles. One individual stated, "I give myself insulin in the bathroom most mornings, but if I ever got caught, they'd give me a hard time." Others described a constant fear of theft: "I hope that no one takes my insulin or my needles. I'm dealing with junkies and crackheads and they want the needles."

None of the respondents spontaneously mentioned difficulty obtaining health care services as a problem for their diabetes management. On specific questioning, however, 12% reported having difficulties making appointments and

Table 3: Categories of difficulties with diabetes management described by study participants

Category	Examples of difficulties	No. (and %) of subjects*
Diet	Inappropriate diet at shelters; inability to make dietary choices	32 (64)
Scheduling and logistics	Inability to obtain insulin and diabetic supplies when needed; inability to coordinate medications with meals	9 (18)
Stress	Belief that daily stresses of being homeless exacerbate diabetes	4 (8)
Insulin syringes and needles	Fear of theft of syringes and needles; shelter forbids possession of needles	3 (6)
Alcohol abuse	Failure to adhere to diabetic regimen when drinking	2 (4)
Competing priorities	More concerned about obtaining shelter than about caring for diabetes	2 (4)
Exercise	Difficulty exercising	2 (4)
Obtaining medications	Lack of prescription drug benefits	2 (4)
No difficulties reported	–	14 (28)

*Sum of percentages is greater than 100 because each comment could be counted under more than one category.

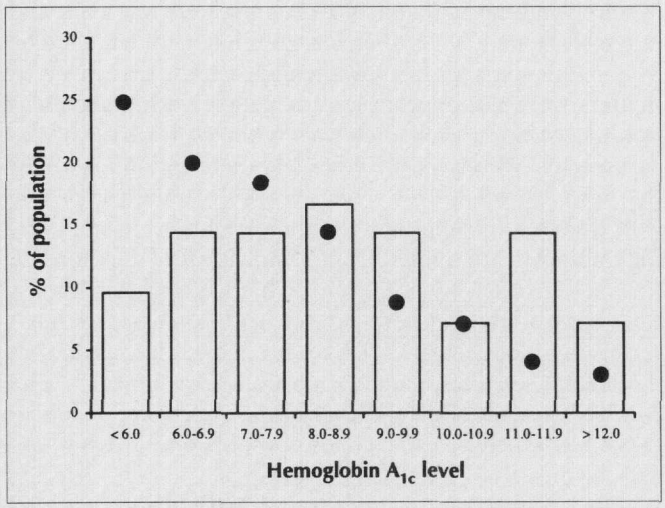

Fig. 1: Distribution of hemoglobin A_{1c} levels in a group of homeless adults in Toronto with type 2 diabetes mellitus (white bars) and in a population-based sample of adults in the United States with type 2 diabetes[13] (black circles).

20% experienced difficulties keeping their appointments with their usual physician. Only 6% stated that they did not feel comfortable or welcomed when they saw their physician. Potentially important barriers to health care included lack of a health insurance card (reported by 24%) and lack of a drug benefit card (reported by 52%), although only 2 respondents reported difficulties obtaining prescription medications or insulin syringes. Sixteen percent of the participants reported difficulties storing their medications (for diabetes or other conditions) in a safe place.

Of the 48 participants who underwent hemoglobin A_{1c} testing 21 (44%) had inadequate glycemic control as defined by Canadian Diabetes Association guidelines. Hemoglobin A_{1c} levels were significantly higher in the study participants than in US adults with type 2 diabetes (Fig. 1). Inadequate glycemic control was not significantly associated with age (less than 50 years v. 50 years and older), sex, self-reported difficulties with diabetes management, difficulties obtaining the necessities of life, having a regular source of diabetes care, possession of a blood glucose self-monitoring unit, major mental illness or CAGE score. Inadequate glycemic control was more common among subjects with a history of crack or cocaine use than among those without such a history (73% v. 35%), but this trend did not reach statistical significance ($p = 0.06$).

Interpretation

About three-quarters of the homeless people with diabetes in our study reported difficulties managing their disease, and almost half had inadequately controlled diabetes. The most commonly reported difficulties were related to the diet at shelters, access to medications and supplies, and the coordination of medications with meals. Shelters could address some of these problems by providing safe storage and ready access to diabetic medications and supplies and establishing a secure place for people to self-administer insulin and use glucose-monitoring devices. Meals consistent with Canada's Food Guide to Healthy Eating[14] would meet the nutritional needs of all shelter residents, including those with diabetes. An objective assessment of shelter meals is needed to determine whether subjective reports of dietary problems are justified.

We identified many potential barriers to appropriate diabetes management that participants themselves rarely mentioned. Alcohol and drug use, mental health problems and difficulties obtaining the necessities of life were relatively common, but few respondents cited them as barriers. Although many subjects did not have a health insurance card or a drug benefit card, only 2 reported difficulties obtaining prescription medications or insulin syringes. This seemingly paradoxical finding may be related to the fact that some shelters can provide coverage for prescription drugs for all residents.[15] Homeless people and their health care providers may therefore characterize barriers to appropriate disease management quite differently and may disagree as to why a disease is poorly controlled.

By at least some measures, access to health care was relatively good among the study participants. Most of the respondents were regularly seeing a physician for diabetes care, suggesting that Canada's system of universal health insurance maintains access to primary health care for vulnerable populations. Physicians therefore represent an important avenue of ongoing intervention for homeless people with diabetes. Health care providers should be aware of the unique difficulties of managing diabetes in the setting of homelessness. Intensification of pharmacological therapy may be indicated at an early stage to achieve glycemic control. These insights may be relevant to the management of other chronic diseases in homeless people.

Our study has certain limitations. Although only 50 subjects were enrolled, this number is about equal to the estimated number of single homeless adults with diabetes in Toronto on any given night. The recruitment of homeless people who were known to shelter staff may have resulted in the selection of subjects more likely to use health care, although multiple other mechanisms were used to identify people with diabetes. Because of logistic issues, we did not enroll homeless people living on the street, who would almost certainly face greater barriers to diabetes management. People with undiagnosed, and therefore untreated, diabetes were also not enrolled. Our findings may therefore underestimate the severity of difficulties faced by homeless people with this disease.

In conclusion, most homeless people in Toronto who have diabetes encounter difficulties managing their disease, and poor glycemic control is common. Future research should identify effective strategies to improve the management of chronic diseases among homeless people.

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Competing interests: None declared.

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