Prevalence, Health and Demographics of Emergency Department Patients with Diabetes

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Objective: To determine the prevalence of diabetes in Southern California emergency department (ED) patients and describe the self-reported general health, demographic and social characteristics of these patients with diabetes.

Methods: Between April 2008 and August 2008, non-critical patients at two Southern California EDs completed a 57-question survey about their chronic medical conditions, general health, social and demographic characteristics.

Results: 11.3% of the 1,303 patients surveyed had diabetes. Patients with diabetes were similar to ED patients without diabetes with respect to gender, ethnicity and race. However, patients with diabetes were older (51 vs. 41), less likely to have a high school education (64.0% vs. 84.7%), less likely to speak English (44.9% vs. 55.4%), and less likely to be uninsured (33.3% vs. 49.5%). Additionally, patients with diabetes had markedly lower self-reported physical health scores (37.1 vs. 45.8) and mental component score and mental health scores (42.0 vs. 47.4) compared with ED patients without diabetes.

Conclusion: In this study of two Southern California EDs, 11.3% of surveyed patients had diabetes. These patients were often poorly educated, possessed limited English language skills and poor physical health. ED personnel and diabetes educators should be mindful of these findings when designing interventions for ED patients with diabetes. [West J Emerg Med. 2010; 11(5):419-422.]

INTRODUCTION

Each year millions of patients receive health services in emergency departments (EDs), and, regrettably, for many of them, this may be their primary source of care.[1,2] A large portion of these ED patients have diabetes, and, alarmingly, previous research has demonstrated their mean HbA1c is over 9%.[3] Although numerous innovative programs have been created to help high-risk, disadvantaged patients achieve adequate glycemic control, none are based out of the ED.[4-7] To create such an ED-based program, we must first uncover some basic characteristics of ED patients with diabetes. As part of an ongoing needs assessment, we sought to determine the self-reported prevalence of diabetes in ED patients, their self-reported general health and associated demographic and social characteristics.

METHODS

We conducted an anonymous cross sectional survey of a convenience sample of patients presenting to the EDs at both the University of California, Irvine (UCI) and Los Angeles County Hospital at the University of Southern California (LAC+USC) from April -August 2008. The study sites were selected to evaluate a possible variance of diabetes prevalence across different types of Southern California EDs. UCI is a private academic hospital serving approximately 40,000 ED patients annually. LAC+USC is a county hospital in central Los Angeles and serves approximately 170,000 patients annually. Patients were eligible to complete the survey if they were 18 years or older, able to complete the survey in English or Spanish, and were not critically ill or injured. If necessary, the survey was read to the patient in their language

of choice, although generally the subjects completed a written survey. The protocol was reviewed and approved by the institutional review boards of the two institutions. Trained research assistants screened patients for eligibility in the adult waiting areas at each institution, obtained informed consent and administered the survey. The survey included 57 questions and took ten minutes to administer. Patients were queried regarding their demographic characteristics, ethnicity, chronic medical conditions, health insurance status and reasons for which they were presenting to the ED. Subjects then completed the Short Form Health Survey version 2 (SF-12). This is a validated tool that yields a mental component score (MCS) and physical component score (PCS) that can be compared across populations. The MCS and PCS for the general United States adult population are 50 with standard deviation of ten. We transcribed data from paper surveys into Microsoft Excel (Microsoft Corp, Richmond Wa.) and analyzed it using Stata 10.0 (Statacorp, College Station, Tx). Means and 95% confidence limits are reported. We performed tests of significance using the Fisher Exact test for categorical variables and Mann-Whitney U for continuous variables (as the data was non-normally distributed). Finally, we conducted a multivariate logistic regression to determine which variables were independently associated with a self-reported history of diabetes.

RESULTS

One thousand three-hundred three patients completed the survey, 802 at USC and 501 at UCI. Overall, 147 (11.3% 9.6-13.0%) reported a history of diabetes. Mean age of respondents was 42 years and 47% were male. The prevalence of disease did not vary significantly by site (11.6% at UCI vs. 11.1% at LAC+USC). Table 1 shows characteristics of patients with and without diabetes. ED patients with and without diabetes were similar in gender, ethnicity and race. However, ED patients with diabetes were older, less likely to have a high school education (64.0% vs. 84.7 %) or speak primarily English (44.9% vs. 55.4%) and more likely to be insured (49.5% vs. 33.3%) compared with ED patients without diabetes. Additionally, ED patients with diabetes had markedly lower self-reported PCS (37.1 [95% CI 35.7-40.3] vs. 45.8 [95% CI 44.0-46.5]) and MCS (42.0 [95% CI 39.4-43.6] vs. 47.4 [95% CI 46.8-48.0]) scores compared with ED patients without diabetes. On multivariate regression, older age and lack of a high school education continued to be independently associated with an increased odds of diabetes. (See Table 2 for results of the multivariate regression.)

DISCUSSION

This is the first study to document the prevalence of self-reported diabetes in ED patients. Two previous studies attempted to document the prevalence of undiagnosed diabetes in ED patients. Both, however, were undermined by poor follow up for confirmatory testing, leaving the results

Table 1. Characteristics of emergency department patients with and without diabetes.

	Patients without Diabetes	Patients with Diabetes	P value
Age (Median)	41	51	<0.001
Male	47.2%	46.1%	0.86
White	40.5%	35.1%	0.306
Black	8.3%	7.2%	0.855
Asian	9.3%	9.9%	0.863
Hispanic	59.8%	66.4%	0.142
High school education	84.7%	64.0%	<0.001
Uninsured	49.5%	33.3%	<0.001
Private insurance	21.5%	17.8%	0.372
MediCaid insurance	19.0%	20.7%	0.643
Medicare	7.0%	17.0%	<0.001
PCS	45.8	37.1	<0.001
MCS	47.4	42.0	<0.001
Born outside of United States	46.6%	58.0%	<0.001
Married	34.7%	44.9%	0.017
Children	63.6%	66.9%	0.459
Primarily English-speaking	55.4%	44.9%	0.018
Primarily Spanish-speaking	36.9%	47.6%	0.015

PCS, physical component score; *MCS*, mental component score

Table 2. Multivariate logistics regression.

"Self-reported Diabetes"		
	Odds Ratio (95% CI)	p-value
Male	1.23 (0.78-1.95)	0.38
Hispanic	1.59 (0.87-2.92)	0.13
Married	0.95 (0.66-1.37)	0.78
Has children	0.95 (0.56-1.64)	0.88
Race		
White	Reference	
Black	1.13 (0.47-2.78)	0.78
Asian	0.90 (0.35-2.30)	0.82
Age		
18-30	Reference	
31-50	2.69 (1.30-5.57)	<0.01*
51-65	4.98 (2.27-10.90)	<0.01*
66-80	3.67 (1.26-10.70)	0.02*
>80	9.28 (2.97-28.99)	<0.01*
Expected source of payment		
Private insurance	Reference	
Medicare	2.03 (0.87-4.59)	0.09
Medicaid	0.77 (0.35-1.66)	0.50
Self pay	0.65 (0.33-1.27)	0.21

difficult to interpret. Our finding that one in nine sampled patients has diabetes and that their self-reported health is significantly lower than their ED counterparts without diabetes, coupled with prior research indicating ED patients with diabetes have HbA1c levels over 9%, suggest that the ED is an important area in which to plan and focus future interventions.[3]

Developing treatment interventions for ED populations with chronic diseases can be logistically difficult as these patients may lack the resources to optimize self-care. Our findings confirm some of these impressions. More than one-third of ED patients with diabetes had less than high school education, nearly half spoke primarily Spanish, and 33% were uninsured. In addition, their scores for physical and mental health were poor. Interventions aimed at helping this medically needed population must be mindful of these findings. Innovative strategies using nurse educators, case managers and community health workers have been successfully used in non-ED settings to help similarly disadvantaged people achieve improved glycemic control.[4-7,10] Unfortunately, to date, there have been no reported trials of ED-based programs to improve glycemic control or quality of life in patients with diabetes. Undoubtedly, the acute, symptom-driven and episodic care provided in the ED is not well suited for the management of chronic diseases such as diabetes. However, previous ED-based efforts for conditions such as smoking cessation, intimate partner violence, and alcohol aversion suggest that interventions for chronic conditions can be effective in the ED setting.[11-15] It follows that the ED visit may represent a unique teachable moment during which patients with diabetes can be offered resources to improve glycemic control and physical functioning. Moreover, for many patients with diabetes, the ED may be the primary potential entry point into the healthcare system.

LIMITATIONS

A limitation of our study is that we sampled only two academic Southern California EDs with largely Latino populations, thus limiting the generalizability of these findings. However, the EDs did vary in terms of size (170,000 vs. 40,000) and primary funding mechanism (county vs. private). A second limitation is that this study may underestimate the prevalence of diabetes in ED patients as some patients may have forgotten about this diagnosis while many others may yet be undiagnosed. Recent studies suggest the prevalence of undiagnosed diabetes in ED patients may be 3-7%, suggesting, if anything, a greater need for ED-based diabetes programs.[8,9] The use of a convenience sample may have introduced some selection bias although we cannot determine the direction this may have biased the result. In addition, we excluded patients who were critically ill or injured as we believed they would not be able to complete the survey. Thus, we do not know the prevalence of diabetes in this subset of patients. Finally, we did not test patients' glycosylated hemoglobin, and therefore cannot determine which variables are associated sub-optimal glycemic control.

CONCLUSION

In this study 11.3% of patients had a self-reported history of diabetes. These patients were older, less educated, had poorer physical and mental health and were less likely to speak English than their counterparts without diabetes. These findings should be considered when developing appropriate, effective and culturally sensitive ED-based mechanisms to help patients achieve glycemic control.

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