



Contents lists available at [ScienceDirect](http://ScienceDirect.com)

Canadian Journal of Diabetes

journal homepage:
www.canadianjournalofdiabetes.com

**DIABETES
CANADA**



Original Research

Hyperglycemia in Young Adults Seen in the Emergency Department: A Health Records Review

Justin W. Yan MD, MSc^{a,b,*}, Alexandra L. Hamelin BSc^c, Katherine M. Gushulak MD^{a,b},
Kristine Van Aarsen MSc^{a,b}, Melanie P. Columbus PhD^{a,b}, Ian G. Stiell MD, MSc^{d,e}

^a The Division of Emergency Medicine, Department of Medicine, London Health Sciences Centre, London, Ontario, Canada

^b Schulich School of Medicine and Dentistry, Western University, London, Ontario, Canada

^c Faculty of Medicine, The University of Ottawa, Ottawa, Ontario, Canada

^d The Department of Emergency Medicine, The University of Ottawa, Ottawa, Ontario, Canada

^e The Ottawa Hospital Research Institute, Ottawa, Ontario, Canada

ARTICLE INFO

Article history:

Received 19 April 2017

Received in revised form

13 June 2017

Accepted 29 June 2017

Keywords:

diabetes mellitus
transition periods
hyperglycemia
emergency department
young adulthood
patient outcomes

Mots clés :

diabète sucré
périodes de transition
hyperglycémie
service des urgences
début de l'âge adulte
évolution de l'état de santé du patient

ABSTRACT

Patients with diabetes who are in emerging adulthood, defined as the life stage between 18 and 29 years of age, have unique challenges in managing their illness and are at risk for acute complications and loss to follow up. This study's objective was to describe emergency department (ED) utilization because of hyperglycemia in emerging adults with diabetes and to characterize 30-day outcomes, including return visits and admission for hyperglycemia.

This was a health-records review of emerging adults presenting over a 1-year period to 4 tertiary care EDs; the patients had known histories of diabetes and final diagnoses of hyperglycemia, diabetic keto-acidosis or hyperosmolar hyperglycemia. Research personnel collected data concerning patients' characteristics, treatments and dispositions and determined whether the patients returned to the ED because of hyperglycemia within 30 days. Descriptive statistics were used to summarize the data where appropriate.

There were 160 ED encounters for hyperglycemia, representing 91 unique emerging-adult patients. Mean (SD) age was 23 (3.6) years, and 52.7% were female; 80 (87.9%) had known type 1 diabetes, and 11 (12.1%) had type 2 diabetes. Of 160 visits, 84 (52.5%) resulted in hospital admission; 54 (33.8%) returned to the ED because of hyperglycemia within 30 days of their initial encounters and 20 (12.5%) were admitted on the subsequent visit.

We characterized ED use and 30-day outcomes of emerging adults with diabetes and hyperglycemia. Future research should focus on earlier identification of those at higher risk for recurrent ED visits or admission and on the efficacy of interventions to prevent these adverse outcomes.

© 2017 Canadian Diabetes Association.

R É S U M É

Les patients diabétiques qui sont au début de l'âge adulte, c'est-à-dire l'étape de vie qui s'étale entre 18 et 29 ans, font face à des difficultés particulières liées à la prise en charge de leur maladie et sont exposés au risque de complications à court terme et de perte de suivi. L'objectif de la présente étude était de dresser un tableau de l'utilisation du service des urgences (SU) en raison d'hyperglycémie chez les diabétiques qui sont au début de l'âge adulte et de décrire les résultats à 30 jours, y compris les visites supplémentaires et les hospitalisations en raison d'hyperglycémie.

Il s'agissait d'une revue des dossiers médicaux de patients au début de l'âge adulte qui se sont présentés au cours de 1 année dans 4 SU de centres de soins tertiaires ; les patients avaient des antécédents connus de diabète et un diagnostic final d'hyperglycémie, d'acidocétose diabétique ou d'hyperglycémie hyperosmolaire. Le personnel de recherche collectait les données concernant les caractéristiques, les traitements et l'orientation des patients et déterminait si les patients étaient revenus au SU en raison d'hyperglycémie dans les 30 jours suivants. Des statistiques descriptives étaient utilisées pour faire la synthèse des données le cas échéant.

* Address for correspondence: Justin W. Yan MD, MSc, Emergency Medicine, Western University, E1-124 Westminster Tower, 800 Commissioners Road, East London, Ontario N6A 5W9, Canada.

E-mail address: Justin.Yan@lhsc.on.ca

1499-2671 © 2017 Canadian Diabetes Association.

The Canadian Diabetes Association is the registered owner of the name Diabetes Canada.

<http://dx.doi.org/10.1016/j.cjcd.2017.06.016>

Il y a eu 160 visites au SU en raison d'hyperglycémie, soit 91 cas individuels de patients qui étaient au début de l'âge adulte. L'âge moyen (ÉT) était de 23 (3,6) ans, 52,7% étaient des femmes, 80 (87,9%) avaient un diabète de type 1 connu et 11 (12,1%) avaient un diabète de type 2. Parmi les 160 visites, 84 (52,5%) ont donné lieu à une hospitalisation, 54 (33,8%) sont revenus au SU en raison d'hyperglycémie dans les 30 jours après leur visite initiale et 20 (12,5%) ont été hospitalisés lors de la visite subséquente.

Nous avons décrit l'utilisation du SU et les résultats cliniques à 30 jours des patients atteints de diabète ou d'hyperglycémie qui étaient au début de l'âge adulte. Les recherches futures devraient porter sur le repérage plus rapide des patients qui sont exposés à un risque plus élevé de visites récurrentes au SU ou d'hospitalisation et sur l'efficacité des interventions pour prévenir ces résultats indésirables.

© 2017 Canadian Diabetes Association.

Introduction

It is well accepted that emerging adulthood, defined as the life stage spanning the ages of 18 to 29 years, is a particularly difficult time for individuals living with diabetes (1,2). This transition period is marked by several challenges involving suboptimal glycemic control, including increased risk for acute complications, loss to follow up, onset and progression of long-term complications of diabetes and even mortality (3–8). Various studies have examined the transition of care from pediatric to adult diabetes clinics, where there may be less support, less supervision and infrequent follow up for these individuals (9,10). Despite the existence of recommendations and position statements from both the Canadian and American diabetes associations regarding care during this transition, there is little evidence demonstrating that any specific intervention impacts patient-important outcomes for emerging adults (11–13). Given that diabetes (including both type 1 and type 2) affects over 25,000 children and youth in Canada, and that its prevalence is continuing to increase worldwide, individuals who have diabetes during emerging adulthood are a special population that requires further study and evaluation (14,15).

A recent study by Markowitz et al involving patients in a young adult diabetes clinic highlighted the rift in transitions of health care in emerging adults with diabetes and discussed considerations of establishing a transition clinic (1). Although this study examined the association between glycemic control and parental accompaniment to outpatient clinic appointments, to our knowledge, no study has previously described emergency department (ED) use by emerging adults with diabetes because of hyperglycemia. As a result, there is a lack of evidence describing how patients with diabetes who are in transition from adolescence to adulthood use the ED when their blood glucose levels are elevated. Increased ED utilization by these individuals may signify a lack of access to follow up or poorer glycemic control, so they present with symptoms of acute hyperglycemic emergencies, such as diabetic ketoacidosis, and require acute health-care services. Indeed, studies of other chronic disease entities, such as congestive heart failure and chronic obstructive pulmonary disease, have demonstrated that access to follow up is associated with a decreased 30-day risk for ED visits and readmission to hospital (16,17). In addition to problems with access to follow up, barriers to attendance at diabetes clinics by young adults may include the lack of a comprehensive transition program to adulthood, failure of communication between pediatric and adult clinics and a perceived lack of support or value in attending adult diabetes clinics (18). These factors may all play roles in increased ED use because of hyperglycemic emergencies in this vulnerable patient population.

The primary goal of our study was to characterize ED visits and resource utilization by emerging adults as the result of hyperglycemia. In particular, we sought to describe the patients coming to the ED with respect to their individual characteristics, medical comorbidities, reasons for visits and likely precipitants of hyperglycemia. We also hoped to characterize the frequency of specific ED investigations and treatments administered to these patients

during their visits. Additionally, a further objective of this study was to characterize patient-important outcomes, such as consultations in the ED, patient dispositions (i.e. admission vs. discharge), 30-day return visits to the ED and hospital or intensive care unit (ICU) admission.

Methods

We conducted health-records reviews of emerging-adult patients (18 to 29 years of age) who presented to 1 of 4 academic tertiary care EDs (approximate combined annual census, 300,000) with discharge diagnoses of diabetes mellitus, diabetic ketoacidosis or hyperosmolar hyperglycemic state during a 1-year period (January to December 2014). The study protocol was approved by the Health Sciences Research Ethics Boards at The Ottawa Hospital in Ottawa, Ontario, and Western University in London, Ontario. This study of emerging adults was a substudy of a larger study examining all patients presenting to the ED with hyperglycemia at our 4 sites over the study period.

All visits of emerging-adult ED patients with known histories of diabetes and final diagnoses of hyperglycemia, diabetic ketoacidosis or hyperosmolar hyperglycemia and their related codes, based on the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10), according to the treating physicians, were eligible to be included in the study. This included patients with types 1 and 2 diabetes, regardless of whether or not they were taking oral hypoglycemic medication or insulin. We included all visits of patients who presented multiple times during the 12-month period. However, data concerning unique patient characteristics, excluding the repeat visits, were reported separately. Patients with comorbid final diagnoses in addition to hyperglycemia, such as infection, cardiac ischemia or adverse drug reaction, were also included. Patients were excluded if they had known advance-care directives for resuscitation involving refusal of treatment or if they were initially assessed at a peripheral or community hospital and transferred to the study sites for ongoing management and direct referral for admission.

Trained research personnel collected data from paper and electronic medical records using a standardized data collection tool (Appendix). Details of patient characteristics and specifics regarding the ED visit, including reason for the visit, clinical findings, results of investigations, physician management, patient disposition and final diagnoses, were collected. Data on relevant past medical histories (e.g. hyperlipidemia, hypertension, coronary artery disease, chronic renal failure, peripheral vascular disease, stroke, etc.); psychiatric histories (e.g. mood disorders, including bipolar or depression, anxiety and panic disorders, thought disorders, including schizophrenia or other psychoses, etc.) and medication histories were also collected. Electronic records were reviewed to determine whether patients had subsequent ED visits and/or admissions to hospital for hyperglycemia within 30 days of their initial visits. Data from the collection tool were then entered into a study-specific Microsoft Excel database (Microsoft, Redmond, Washington, United

Download English Version:

<https://daneshyari.com/en/article/8720752>

Download Persian Version:

<https://daneshyari.com/article/8720752>

[Daneshyari.com](https://daneshyari.com)