



Seeking Care for Hyperglycemia in the Emergency Department: Through the Eyes of the Patient

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Health care systems often provide a range of options of care for patients with illnesses who do not require hospital admission. For individuals with diabetes, these options may include primary care providers, specialized diabetes clinics, and urgent care and walk-in clinics. We explored the reasons why patients choose the Emergency Department over other health care settings when seeking care for hyperglycemia.

“Sometimes, I just wish it would all just go away, but it's not going to. I know there are so many things that I could do to make it better and not end up in emerg, and I'm not doing them. I have that struggle with myself all the time, but it's only It's up to me. Maybe one day I'll do it.”
(Participant #16, 28-year-old woman, type 1 diabetes)

Patients with diabetes frequently present to a hospital emergency department (ED) for their care. In the United States, diabetes is the most prevalent chronic disease among all visitors to the ED. More than 11 million visitors annually identify themselves as having diabetes, ~225,000 visitors have an ED discharge diagnosis of diabetes, and rates of diabetic emergencies are increasing (1,2). Almost 20% of patients with poor glycemic control return to the ED, and ~10% will be admitted within a 30-day period for further hyperglycemic episodes (3). This demand for diabetes care is only expected to increase, with estimates predicting an overall disease prevalence of up to 40% (4).

With the public's ever-increasing use of health care resources and an aging global population, government and health care system policies strive to reduce use of the ED and hospital care when appropriate, mostly because of the high cost of ED care compared with alternative health care options (5–8). In developed countries, health care systems often provide a range of options for patients with

illnesses that do not require hospital admission (5,9). For individuals with diabetes, these options may include primary care providers, specialized diabetes clinics, and urgent care and walk-in clinics. Despite the availability of these services, some patients still choose to present to the ED for care, even when doing so is not always medically necessary.

How do patients with diabetes decide where to seek diabetes-related care? Although previous studies have examined factors influencing patient choice from a provider perspective (5,10,11), few studies have explored the patient perspective. For patients with hyperglycemia, the decision to seek care in the ED is complex; at times, the ED is the most appropriate health care setting for patients to obtain the care they need, particularly when symptoms are severe or when diabetic ketoacidosis (DKA) is a concern. However, some cases of hyperglycemia are less urgent and may be best addressed in an outpatient health care setting. With a better understanding of the choice to seek care in the ED through the eyes of the patient with hyperglycemia, we may be able to provide more empathetic and holistic care that can better address the unique health care and educational needs of these individuals and ensure that the expectations of this population are met in the most appropriate care setting.

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The objective of this study was to explore the reasons why patients choose the ED over other health care settings when seeking care for hyperglycemia.

Subjects, Materials, and Methods

We conducted a qualitative study using constructivist grounded theory (CGT) methodology to explore our research questions. Because CGT probes how and why participants act and construct meanings in specific situations (12), it was well suited to explain why our participants chose to come to the ED with their hyperglycemia concerns. Inherent in CGT methodology is the idea that the researcher and the participant construct the experience and meaning together, enabling the theoretical interpretation (12). It is therefore important for the research team to remain reflexive (13) and to contemplate how their background and experience may shape their perspectives. The lead author (J.W.Y.) is an emergency physician and clinician researcher. Three nonphysician collaborators (D.A., research assistant; M.P.C. and K.V.A., research coordinators) are health science researchers. Two collaborators (S.L.L. and T.S.) are diabetes specialists, and one (L.G.S.) is an emergency physician with experience in qualitative methodology.

This study was conducted at a two-site, urban, academic hospital in London, Ontario, Canada, with an annual ED volume of 165,000 patients. The Western University Health Sciences Research Ethics Board approved all research procedures.

This research is part of a larger project exploring risk factors for recurrent ED visits for hyperglycemia in patients with diabetes. Patients ≥ 18 years of age who had visited the ED for hyperglycemia at least once during the previous calendar year were eligible for inclusion. We used purposive sampling (14) to ensure representation across age, sex, and diabetes type. Potential participants were invited to take part in face-to-face interviews by a notification letter followed by a telephone call. As the study progressed, we used theoretical sampling (14) to recruit participants who were able to confirm or dispute the preliminary insights.

After written informed consent was obtained, 22 patients participated in semistructured interviews conducted by the lead author (J.W.Y.) between June and October 2019. The interview guide (Supplementary Appendix S1) was developed from a literature review and the clinical experience of the research team. Interviews were recorded and transcribed verbatim, with identifying data removed. Consistent with the CGT approach, data collection and analysis were

done concurrently to support an iterative approach to theorizing (12). As a result, the interview guide was frequently revised to further probe emerging themes and enable patients to more directly describe their decision-making thought process when seeking care for hyperglycemia in the ED. Data collection and analysis continued until we reached theoretical sufficiency (15), when we believed we had sufficient data to satisfy our exploratory research question.

Data were analyzed using the constant comparative process as is customary in CGT (12). Themes identified in the initial transcripts were explored in greater depth during subsequent interviews. First, J.W.Y. and L.G.S. independently read and coded the first two transcripts line by line to identify overarching ideas and initial codes. Together with D.A., they consolidated the initial codes into preliminary themes, and D.A. applied these codes to the next few transcripts with refinements. The team met frequently to review the analysis and develop the final list of themes used to recode the entire dataset. Differences in interpretation were resolved by discussion and consensus. Analytic insights were tracked using reflective memos (16).

Interviews were coded and managed using NVivo software, v. 12 (QSR International, Doncaster, Victoria, Australia). An audit trail documented all steps and decisions.

Results

Characteristics of Study Participants

Twenty-two patients consented to be interviewed. Baseline characteristics of the participants, including age, sex, type of diabetes, ED disposition, and frequency of ED utilization, are summarized in Table 1. The interview length averaged 35 minutes (range 25–50 minutes).

Interview Results

Participants described five reasons they sought help for hyperglycemia in the ED: urgency, expectation of specialized interventions, advice from others, fear of complications, and convenience. Table 2 summarizes these themes and provides representative quotations from participants illustrating each one.

Theme 1: Urgency

When asked about their choice of where to seek care for hyperglycemia, patients identified the ED as being the most appropriate place when they believed the acuity of their illness to be high, as described by one participant:

TABLE 1 Study Participant Characteristics (N = 22)

Characteristic	Total
Sex	
Male	10 (45.5)
Female	12 (54.5)
Age, years	
20-29	4 (18.2)
30-39	2 (9.1)
40-49	6 (27.3)
50-59	5 (22.7)
60-69	2 (9.1)
70-79	2 (9.1)
≥80	1 (4.5)
Age, years, mean (SD)	48.7 (17.4)
Age range, years	21-85
Type of diabetes	
Type 1	10 (45.5)
Type 2	12 (54.5)
ED disposition	
Admitted	7 (31.8)
Discharged	15 (68.2)
Number of ED visits for hyperglycemia in the past 12 months	
1	9 (40.9)
2	3 (13.6)
3	4 (18.2)
4	1 (4.6)
5	2 (9.1)
≥10	3 (13.6)
Number of ED visits, range	1-64
Diabetes first diagnosed during ED visit	3 (13.6)

Data are n (%) except where otherwise noted.

“In my own head, I think, ‘If I’m having an issue right now and I need help right now, the emerg is where I go.’” (Participant #1, 28-year-old man, type 1 diabetes)

For several patients, certainty in choosing to seek help in the ED over other options appeared to match their perception of the severity of their illness. Thus, those who believed their health status to be of utmost urgency were convinced that the ED was the preferred and most immediate place to be seen by a health care provider for medical assessment.

Theme 2: Expectation of Acute, Specialized Interventions

Patients also understood that the ED would be able to provide a level of medical care that could not be offered in other health care settings. For example, some patients self-identified their need for intravenous (IV) fluids to treat dehydration and their lack of alternative options to receive this intervention, as illustrated by this patient:

“Oh, my god, I just wanted to feel better. I wanted to stop vomiting. I definitely . . . oh, my god, I was like, ‘Get me on an IV, please. Get some fluids into me.’ I was really happy that the first thing they did was, boom, get an IV in, because, as soon as you get an IV in, you know things are going to get better.” (Participant #16, 28-year-old woman, type 1 diabetes)

Furthermore, for some participants, the ED was believed to be the best setting to obtain treatment for rapid lowering of blood glucose levels when higher than what the patient was comfortable treating at home, as explained by this participant:

“My blood sugars were, like, 18 and 20 [mmol/L], they weren’t going down, so my husband was like, ‘You need to go to the emerg.’” (Participant #6, 33-year-old woman, type 1 diabetes)

Theme 3: Advice From Others

Some patients expressed their own reluctance to visit the ED over other health care options, but said they did so at the insistence of others. Inherent in this theme was the idea that patients were reluctant to use emergency care services inappropriately but felt “pressured” to do so by others’ influence. Family members or colleagues, particularly those who were health care providers or who had experience with health care, would convince these patients to go to the ED despite the patients themselves not wanting to, as explained by this participant:

“It wasn’t me. It was my daughter, who is a nurse. She stopped by because she knew I was ill, and she said, ‘Oh no, oh no, hospital, let’s go, get in the van.’ And she brought me in.” (Participant #11, 68-year-old man, type 2 diabetes)

Previous encounters with health care providers had helped to establish a pattern of behavior that influenced help-seeking in the ED for future instances. When a health care provider in a perceived position of authority suggested going to the ED, patients were likely to take this advice seriously. One participant described it this way:

“And my family doctor . . . out of the last seven times I’ve seen him, four of those times he insisted that I go to the hospital by ambulance.” (Participant #20, 43-year-old man, type 1 diabetes)

Theme 4: Fear of Complications

Fear of DKA and other diabetes complications were described by several participants as being important motivators for seeking care for hyperglycemia in the ED. In particular, this fear was described most by those with type 1

TABLE 2 Five Themes Describing Patients' Choice to Come to the ED

Theme	Representative Quotations
Urgency	<i>"I knew that I had to be seen right away. I no longer had control of myself. I need emergency attention right away. It wasn't something that could wait."</i> (Participant #16, 28-year-old woman, type 1 diabetes)
Expectation of acute interventions	<i>"And, you know, it was beyond help because I couldn't keep liquids down. And I needed the IV, because that's what happens with me."</i> (Participant #6, 33-year-old woman, type 1 diabetes) <i>"From a very young age, I got told high blood sugars, if I ever became a diabetic, you go straight to the hospital, and you get them checked out and done there, because . . . the hospital can do everything."</i> (Participant #2, 45-year-old woman, type 1 diabetes) <i>"Emergency is most helpful when you are getting so serious when the blood sugars run up to even you can't imagine, over 33 and 34 [mmol/L]."</i> (Participant #12, 85-year-old man, type 2 diabetes)
Fear of complications	<i>"I haven't been in DKA before, but I've heard that it's terrible. I've had times where I was close, but I haven't been in it, so I wouldn't want it. I felt terrible in the close times. I wouldn't want to experience being into it."</i> (Participant #22, 21-year-old woman, type 1 diabetes) <i>"Once you get sick like that, you sort of have a tendency to follow the rules. It's not a pleasant experience, especially finding out that the end result could end up in being death, you could take the big dirt nap if you don't do what you're told. And it is a very progressive disease, as I have found out over the years. And it's taking its toll on me."</i> (Participant #11, 68-year-old man, type 2 diabetes)
Advice from others	<i>"My mom saw me . . . and was like, okay you're going to the hospital."</i> (Participant #19, 25-year-old man, type 1 diabetes) <i>"I felt like I probably would have waited a bit longer, but under the influence of people working with me, they were like, 'Get checked sooner,' so that's why."</i> (Participant #21, 30-year-old woman, type 1 diabetes) <i>"I was told by my doctor to get my ass in here, so I did."</i> (Participant #3, 46-year-old woman, type 2 diabetes)
Convenience	<i>"For me, the proximity. I just live . . . a couple of blocks down the street, so it's the closest place for me to go as well."</i> (Participant #10, 40-year-old man, type 1 diabetes) <i>"I just live, like I say, down the street. So, I just thought, 'Well, I'll come to emergency, they should be able to help me out.'"</i> (Participant #9, 70-year-old man, type 2 diabetes) <i>"I'd rather get to emerg, give them all my little history like I've given you, let them take their tests, and get a quick answer as opposed to book an appointment with the doctor, then everything takes days and weeks."</i> (Participant #4, 59-year-old man, type 1 diabetes)

diabetes who either had previous experience with, or had been warned about, DKA, as illustrated here:

"If you keep on having so many highs [in] a certain amount of [time], you can go into DKA, and that's what they worry about. And I was . . . worried that that was what was happening, that I was having a DKA." (Participant #6, 33-year-old woman, type 1 diabetes)

These patients were often seeking reassurance from ED health care providers that they did not have DKA to allay their fears.

Some participants were worried about the significant morbidity, mortality, and impaired quality of life for themselves and their loved ones associated with DKA and other diabetes complications. One participant described the fear of being a burden to others in this way:

"... the fear of ending up in a bed, just stuck there, that sticks with you a fair bit. I guess what bothers me every day as far as day-to-day is how my body is shutting down so quick. And, as I said, I don't want to be stuck in a bed and getting

my mom and my wife to wipe my ass. That's what I'm scared of right now." (Participant #20, 43-year-old man, type 1 diabetes)

Furthermore, participants with either type 1 or 2 diabetes had knowledge of more chronic complications of diabetes, including neuropathy and vascular compromise. Many of the patients spoke of family members whom they had seen suffer from complications of diabetes and poorly controlled blood glucose. This participant described the fear of these complications as a motivating influence to seek early care in the ED when encountering acute hyperglycemia:

"I lost a cousin to type 1 diabetes, and I watched her die, more or less, before the age of 40. So, she had it at a young age. She wouldn't test; it would hurt her fingers. The nerves were so damaged that it caused lack of blood flow to her toes, and it just started rotting from her toes up. And to see that, I'm like, 'That is not who I . . . that is not what I want to be.'" (Participant #6, 33-year-old woman, type 1 diabetes)

Theme 5: Convenience

For some patients, the choice to present to the ED for hyperglycemia management was mostly based on convenience and had little to do with perceived severity of symptoms or need for hospital-specific medical services. The ED was seen as accessible and available 24 hours a day, regardless of perceived urgency. This participant's explanation was representative of several patients who felt that coming to the hospital was easier for them because of its geographical proximity to their home:

"[The hospital] just happens to be a heck of a lot closer to where I live than the rest. And I didn't want to have to drive very far." (Participant #17, 48-year-old woman, type 2 diabetes)

Still others expressed frustration at the lack of access to timely care with their family physicians and felt that going to the ED was the most efficient option. The idea that the ED was the most convenient place to seek care was intimately linked with the idea that access to a family doctor was limited, inconvenient, and inefficient, as described by this participant:

"When I call my family doctor, the next available time is 2 weeks from now. It's not a hairdresser or something to wait 2 weeks for. But if I go to emergency, I might wait 10 hours. It's worth it." (Participant #8, 52-year-old woman, type 2 diabetes)

Convenience was therefore an important factor in influencing patients' decision to come to the ED for hyperglycemia care even when they felt their condition was not serious. Despite the expectation of potentially long wait times in the ED, patients were still willing to come rather than wait a longer time to see their primary care providers in a clinic setting.

Discussion

Our study explored patients' choice to present to the ED for their concerns about hyperglycemia and found five reasons affecting their decision: urgency, expectation of acute interventions, advice from others, fear of complications, and convenience. This study contributes to the growing body of literature examining the patient perspective on help-seeking in the ED and provides useful insights into patients' motivation and expectations surrounding acute diabetes care.

Our study is unique in that it is the first to explore these factors of influence in individuals with either type 1 or type 2 diabetes from the patient perspective; these factors are consistent with those found in studies of patients who seek

ED care for long-term or nonurgent, low-acuity conditions (5,17–19). In a systematic mapping review by Coster et al. (11), 38 studies were included to describe drivers that underpin patients' decisions to access emergency services. In that study, six broad themes were identified: perceived urgency, perceived need for services, views of others, convenience, access to primary care, and individual patient factors (e.g., cost). The first four themes align well with those found in our study. For our participants, access to primary care was closely linked to convenience. Furthermore, because our participants were all part of the Canadian publicly funded health care system, cost was not described as a factor influencing the decision to seek ED care.

Another study, by Shearer et al. (20), explored the experiences of 20 African American individuals living with type 2 diabetes and found that the overarching perspective for understanding how participants used the ED was one of "contested ownership" of illness. Participants in this study expressed this ownership as "doing what you got to do" to manage and take control of a disease that has become a part of the self-identity of someone with a chronic illness. The perspective of ownership could be contested between managing well and not managing well because each participant made an ambulatory-sensitive ED visit. The study authors found that perceived urgency was the main driver for patients' decision to take control of their symptoms and achieve ownership of their overall disease.

Given that patients with hyperglycemia can present with a wide spectrum of disease severity (from those with only mild elevations in serum blood glucose who can be discharged after assessment to those with DKA who require hospital admission), an individual's decision to seek care in the ED over other options is extremely complex. In our study, several participants received a new diagnosis of diabetes during their ED visit despite having symptoms for some time without seeking care. Thus, our participants demonstrated a correspondingly wide range of reasons for choosing to come to the ED, and some could have been appropriately seen in a non-ED setting such as a family physician's office, diabetes clinic, or walk-in clinic.

For individuals with non-life-threatening hyperglycemic concerns, past experiences with their illness and previous encounters with health care providers often influenced the determination of whether to seek care in the ED. A mixed-methods study by Hunter et al. (5) exemplifies this decision-making process regarding ED care by differentiating between two theoretical concepts that have previously been described in the literature (21,22). The first, "candidacy," describes how access to health care is often framed as

requiring work for patients to achieve, and eligibility to access care is continuously negotiated in patient-provider interactions. The second concept, “recursivity,” refers to how a patient’s past experiences influence the process of help-seeking and future demand for services.

When assessing the themes identified in our study of individuals with hyperglycemia, it is evident that this conceptual framework applies to our patients’ decision-making process when seeking care in the ED. In particular, candidacy and recursivity support the themes of expectation of specialized interventions and fear of complications and appear to be more important in the decision-making process for patients with diabetes than has been shown in the literature for other chronic diseases (23,24), especially because of the life-threatening nature of complications such as DKA. Candidacy for these two themes, and the patients’ continuous negotiation for eligibility to access care, was shown in our results by advice from others, including physicians, to seek help in the ED (Table 2). Recursivity for both themes was demonstrated through previous experience, shown in our results from our participants’ fears (Table 2), which ultimately led to their decision to come to the ED.

As Hunter et al. (5) propose in their study, these two theoretical concepts are important because the strategy of educating patients about appropriate health care service alone is not likely to change behavior. Rather, health care systems need to change patients’ care experiences to demonstrate what potential alternative settings to seek care exist. In contrast, for individuals with diabetes who are unwell and potentially have DKA, health care systems should seek to incorporate the concepts of both candidacy and recursivity when informing patients of when to come to the ED promptly and receive the proper interventions that can only be offered in the ED.

Various models describing health care utilization and patients’ choice to seek care have been in existence for many decades (10,25,26). One model proposed by Padgett and Brodsky (10) suggests three stages that affect the choice to use the ED specifically. These stages include problem recognition, the decision to seek help, and the decision to use the ED. For patients who have DKA specifically, the decision to seek care in the ED versus other health care settings is a unique challenge. Our participants demonstrated awareness of DKA as an acute, potentially life-threatening complication of diabetes; expressed fear about this condition; and recognized that the ED is the appropriate place to seek care when requiring urgent, specialized interventions to treat DKA.

In jurisdictions where self-monitoring of ketone bodies via blood or urine testing at home is available, it can be a safe, effective, and clinically reliable way of recognizing DKA early and before severe symptoms ensue (27). However, when the symptom constellation does not suggest an acute emergent issue such as DKA, or where home monitoring for ketones is unavailable, enhancing education and awareness and understanding of some of the factors that influence decision-making is perhaps the only strategy to equip patients with the tools they need to seek the most appropriate care in the most appropriate setting. One would hope that patients would err on the side of caution when unsure about whether their acute hyperglycemia is DKA.

Our participants all live within a single, urban geographic setting in Ontario, Canada, and our results may not be transferable to patients in rural settings or in other countries with variable access to health care resources and options for seeking care. However, the similarity of our findings to existing literature is reassuring. Also, our intentional choice to have an ED physician conduct all of the interviews may have caused some participants to alter the narrative about their ED expectations and experience. On the contrary, the insider perspective and understanding of the ED visit enabled by this physician may have encouraged participants to share their stories. Additionally, our analysis was balanced by the nonphysician and non-ED research team member perspectives. Finally, although we explored the patient’s perspective, the involvement of family members was clearly important, as demonstrated by many of the various themes. Future research exploring the perspectives of family members, loved ones, and caregivers in addition to those of the patients themselves would offer a more comprehensive view of the issues facing patients when seeking ED care for hyperglycemia.

In conclusion, this study found five reasons patients with hyperglycemia seek care in the ED over other options: urgency, expectation of specialized interventions, advice from others, fear of complications, and convenience. These results may inform the delivery of more appropriate and empathetic health care. With the increasing prevalence of diabetes in the developed world and the burden of disease it places on EDs and health care systems, an understanding of patient-level factors and their influence on choosing emergency services is imperative. Because of limited health care system resources, the ultimate goal would be to develop public health, educational, and ED strategies or medical interventions to address the needs of this important population and help them seek care in the most appropriate setting.

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DUALITY OF INTEREST

S.L.L. has received grants and/or personal fees from Merck, Novo Nordisk, and Sanofi. T.S. has received grants and/or personal fees from AstraZeneca, Janssen Pharmaceuticals, Lexicon Pharmaceuticals, Medtronic Canada, Novo Nordisk, and Sanofi Canada. No other potential conflicts of interest relevant to this article were reported.

AUTHOR CONTRIBUTIONS

J.W.Y. conceived the study. J.W.Y., M.P.C., K.V.A., and L.G.S. obtained research funding. J.W.Y., D.A., S.L.L., T.S., and L.G.S. designed the study. J.W.Y. and D.A. undertook recruitment of participants and collected data. J.W.Y., D.A., and L.G.S. analyzed the data. J.W.Y. drafted the manuscript, and all authors contributed substantially to its revision. J.W.Y. is the guarantor of this work and, as such, had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

PRIOR PRESENTATION

A preliminary version of this research in abstract form was accepted for oral presentation at the Canadian Association of Emergency Physicians' annual conference, in Ottawa, Ontario, Canada, 1–4 June 2020, but was subsequently cancelled because of the coronavirus disease 2019 pandemic.

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