

*BARRIERS TO CARE IN  
HOMELESS PATIENTS WITH  
DIABETES MELLITUS*

Thesis

*Nathalie Scherer*

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## Abstract

**Research Question:** Between access to medication, access to diabetic-friendly food, and access to healthcare services, what are the primary barriers affecting diabetes management for patients experiencing homelessness in Fort Worth?

**Background, Significance, and Rationale:** There are few studies assessing specific barriers to care for homeless patients with diagnosed diabetes, despite evidence that homeless patients suffer from diabetes at about the same rate as the general public. Homeless patients often face a particular set of challenges, including unstable housing, limited food choices, mental health problems, lack of access to stable care, lack of access to transportation, and chronic stress, that are different than the barriers that housed patients with diabetes face. We have developed a survey that will focus on barriers to care that are unique for homeless patients managing chronic conditions, specifically diabetes. Having data on patients' barriers to care will allow the True Worth Clinic to more effectively address the unique barriers that their patients face.

**Materials and Methods:** This is a cross-sectional survey of adult patients experiencing homelessness and diagnosed with diabetes at the JPS True Worth Clinic. Statistics were performed using SAS<sup>®</sup> 9.4 (SAS Institute, Cary, NC).

**Results:** There were multiple barriers that a majority of respondents, expressed in the management of diabetes while experiencing homelessness. Patients reported difficulty taking their prescribed diabetes medication, transportation to a pharmacy and forgetting to take their medication were the most common barriers. Additionally, among the patients who stated someone talked to them about food to eat for optimal diabetes control, only approximately half (54%) felt they had access to those types of foods.

**Conclusions:** Being able to describe barriers to diabetes care that are specific to patients experiencing homelessness is the first step in being able to address those barriers. We hope that with the results of this survey interventions can be more targeted at things that patients specifically pointed out as issues, such as transportation to and from the pharmacy, storage for medication, and expanding access to foods that help control blood sugar.

## Research Question

**Hypothesis:** The primary barrier for diabetes management for patients experiencing homelessness in Fort Worth will be lack of diabetes specific health education.

## Introduction, Significance, and Rationale

**Introduction:** According to the 2018 Annual Homeless Assessment report released by the U.S. Department of Housing and Urban Development, there were 552,830 people experiencing homelessness on a point-in-time count in the United States. About 65% of those people were in sheltered locations (this includes emergency shelters, transitional housing, and safe havens), while the other 35% were unsheltered, i.e. their sleeping location is a public or private place that is not typically used for shelter, such as streets, cars, and parks.<sup>1</sup> There are few studies assessing outcomes for homeless patients with diagnosed diabetes, despite evidence that homeless patients suffer from diabetes at about the same rate as the general public.<sup>2</sup> The rate of diabetes in the general public has been climbing steadily upward for decades, and as of 2018 at least 10.5% of the U.S. population had some form of type 1 or type 2 diabetes mellitus.<sup>3</sup> It is expected that this percentage is similar in the homeless population, but many patients are unable to seek care for their chronic disease until there is an acute presentation, such as foot ulcers, diabetic retinopathy or diabetic nephropathy. In addition, the homeless population represents a group with a particular set of challenges that often requires different approaches from healthcare providers. These include unstable housing, limited food choices, behavioral health problems, lack of access to stable care, lack of access to transportation, and chronic stress.<sup>4</sup> Addressing concerns that are specific to this patient population, as well as utilizing approaches that are not the norm for diabetes education, may help in preventing the chronic disease develop into an acute exacerbation. However, prior to addressing the barriers it is necessary to have a more extensive understanding of the what those barriers actually are.

As mentioned above, Diabetes Mellitus type 2 is a common chronic condition that presents as hyperglycemia, insulin resistance, and impaired insulin secretion.<sup>5</sup> With diet and lifestyle changes, and pharmacological intervention (if necessary), many patients diagnosed with type 2 diabetes are able to avoid complications resulting from these changed physiological processes. However, long standing hyperglycemia can cause tissue damage through increases in different metabolic pathways and nonenzymatic glycosylation of proteins.<sup>6</sup> Diet and lifestyle changes that often help patients avoid complications are difficult for patients who are homeless to implement, as food options may be limited and addressing more basic needs, such as shelter, is far more important than exercise.

**Significance:** There is a large body of research regarding acute illness, substance use, and mental health in patients who are homeless. There is very little research that focuses on patients who are homeless with chronic illnesses, such as diabetes, despite the fact that this

group as a whole is one of the costliest patient populations for emergency populations and hospitals.<sup>7</sup> Diabetes mellitus is a fairly common and often well-managed disease in the general population, but due to the underlying conditions of homelessness, tends to be managed poorly. Patients are often not seen until their situation is acute. Helping homeless patients manage their diabetes mellitus more effectively has the potential to significantly increase patient quality of life, as well as decrease hospital costs for high-frequency patients. The main example of increasing quality of life for patients is by reducing the number of lower extremity and foot amputations. Foot problems occur in almost two-thirds of homeless patients, and are only exacerbated by diabetic neuropathy. This poses a problem to the patients, because walking is often their main mode of transportation.<sup>8</sup> By addressing barrier that homeless patients face in manage their diabetes, we are likely to decrease the sequela of untreated diabetes, such as amputations.<sup>9</sup> Being able to tailor recommendations for diabetes treatment with the patients' limitations in mind is key. There are many, more general, approaches that can be taken to aid with access to care in the homeless population, but we aim to pinpoint specific places where resources can be increased to give targeted and cost-effective interventions.

**Rationale:** Fort Worth has a significant homeless population, as well as an establish clinic through JPS (True Worth Clinic) that primarily services homeless patients. JPS also has an effective diabetes education team. The hospital is invested in decreasing emergency department usage in non-acute situations, as evidenced by their creation of the Emergency Department Utilization Task Force (EDUTF). All of these factors make it an ideal location assess barriers that patients face with the hope of addressing those barriers, improve patient care and reduce healthcare costs in the future.<sup>10</sup>

## Research Materials and Methods

We conducted a cross-sectional survey of adult patients experiencing homelessness and diagnosed with diabetes at the JPS True Worth Clinic. The North Texas IRB institutional review boards considered this project exempt, as it was a survey of adult patients. Surveys were done on paper and did not contain any identifying patient information. After being collected, the surveys were kept in a locked office.

Statistics were performed using SAS<sup>®</sup> 9.4 (SAS Institute, Cary, NC). The survey population consisted of forty-seven (47) patients consented and completed the survey. **Table 1** describes the demographic and clinical characteristics of the respondents. Approximately two-thirds (63%) of the patients were between the ages of 55-74 years of age. Majority of the patients were male (66%), which is similar to the patients experiencing homelessness population. The respondents were racially and ethnically diverse, with 43% being non-Hispanic White, 32% being non-Hispanic Black, and 19% being Hispanic. Over half the respondents (57%) had been

diagnosed with diabetes for greater than 5 years. Nineteen percent (19%) of patients did not have any medications (**Table 1**). Out of the 38 patients with medication, the most prevalent prescriptions were insulin (71%) and metformin (53%).

The full survey can be found below.

### **Demographic Information**

- 1) *What is your age?*
  1. *18-24 years old*
  2. *25-34 years old*
  3. *35-44 years old*
  4. *45-54 years old*
  5. *55-64 years old*
  6. *65-74 years old*
  7. *75 years or older*
  
- 2) *What is your gender?*
  1. *Male*
  2. *Female*
  3. *Other: please specify*
  
- 3) *Ethnic origin: Please specify your ethnicity.*
  1. *White*
  2. *Hispanic or Latino*
  3. *Black or African American*
  4. *Native American or American Indian*
  5. *Asian / Pacific Islander*
  6. *Other*
  
- 4) *How long have you been diagnosed with diabetes?*
  1. *Less than 1 month*
  2. *1 month – 6 months*
  3. *6 months – 1 year*
  4. *Between 1 year and 5 years*
  5. *Greater than 5 years*
  
- 5) *What was your last hemoglobin A1C?*
  1. *6.0 – 6.9*
  2. *7.0 – 7.9*
  3. *8.0 – 8.9*
  4. *9.0 – 9.9*
  5. *10.0 – 11.0*
  6. *11.0 – 11.9*
  7. *12.0 – 12.9*
  8. *13.0 – 13.9*
  9. *14.0 – 14.9*
  10. *15.0 or greater*
  
- 6) *Please list your current medications:*

## Survey

- 1) *Has a healthcare worker (nurse, doctor, social worker, or educator) ever talked to you about how to manage your diabetes?*
  1. *Yes*
  2. *No*
- 2) *In the last 7 days have you checked your blood sugar*
  1. *Every day*
  2. *Most days (4-6)*
  3. *Some days (1-3)*
  4. *No days*
- 3) *If not everyday, why not?*
  1. *You do not have a way to measure your blood sugar*
  2. *You do not know how to measure you blood sugar*
  3. *You do not remember to check your blood sugar*
  4. *You do not want to check your blood sugar*
  5. *You are not prescribed glucose monitoring*
  6. *Other*
- 4) *Describe your response to the following sentence: "Diabetes has caused you to change the way you eat"*
  1. *Strongly disagree*
  2. *Somewhat disagree*
  3. *Neither agree nor disagree*
  4. *Somewhat agree*
  5. *Strongly agree*
- 5) *Please explain the answer choice (free response)*
- 6) *Has anyone ever talked to you about the foods you should eat to manage diabetes, and their importance?*
  1. *Yes*
  2. *No*
- 7) *Do you feel like you have access to those types of foods?*
  1. *Yes*
  2. *No*
- 8) *If no, why not? Check all that apply*
  - You do not know where to get good, nutritious food*
  - You do not know what kind of food is good for diabetes*
  - You are unable to get the food you want due to a transportation issue*
  - You cannot afford quality food*
  - You do not have the equipment to cook and store good, nutritious food*
  - It is too difficult for you to eat good, nutritious food*
  - You do not want to eat good, nutritious food*
  - Other reason not listed here*
- 9) *Check each box where you estimate that you get at least 25% of your food per month*
  - Buy groceries from a grocery store (for example: Walmart, Target, etc)*
  - Buy groceries from a convenience store (for example: 7/11, QuickTrip, etc)*
  - Receive groceries from a food pantry*
  - Buy meals at a fast food establishment (Wendy's, McDonald's, etc)*
  - Eat meals provided by a shelter*
  - Eat meals provided by a meal distribution service*
  - Other*
- 10) *Are you currently prescribed any medications for your diabetes?*

1. Yes
2. No

11) Are any of the following consistent barriers to you taking your diabetes medication. Select all barriers that apply:

- You do not know how to get the medication
- You do not know how to use the medication
- You are unable to pick up the medicine due to a transportation issue
- You cannot afford the medicine
- It is too difficult for you to take the medicine properly
- You do not want to take the medicine
- You forget to take your medication
- You do not have a safe place to store your medication
- You do not have access to refrigeration to store insulin
- Other reason not listed here
- No barriers - you can take your medicine regularly

12) Do you any of the following prevent you from seeking care for your diabetes? Select all that apply:

- Appointments are not available when you need
- You feel unwelcome in the healthcare setting
- Healthcare providers are unable to meet your needs
- You do not have consistent transportation to the clinic
- You are unable to afford the cost of the visit
- N/A, currently attends regular scheduled healthcare appointments)

13) Please describe your current living situation

1. With family or friends in a house/apartment
2. In a transitional housing program
3. In a motel or hotel
4. In an emergency shelter
5. In a car or other vehicle
6. In a tent
7. On the street
8. In an abandoned building
9. Other

14) For how long have you been in your current living situation situation

1. 6 months or less
2. 6 months to 2 years
3. 2 years or more

15) On a scale of 1-10, how confident are you in your ability to manage your diabetes, currently?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

**Table 1: Demographic and Clinical Characteristics of the Participants who answered the Survey**

<b>Characteristic</b>	<b>N=47</b>
	Frequency (%)
<b>Age Category</b>	
18-44	6 (13%)
45-54	11 (23%)
55-74	30 (63%)
<b>Gender</b>	
Female	16 (34%)
Male	31 (66%)
<b>Race and Ethnicity</b>	
Non-Hispanic White	20 (43%)
Non-Hispanic Black	15 (32%)
Hispanic	9 (19%)
Non-Hispanic Other	3 (6.4%)
<b>Diabetes Length of Time</b>	
Less than 6 months	2 (4.3%)
6 month—1 year	4 (8.5%)
1 year to 5 years	14 (30%)
5 years or more	27 (57%)
<b>A1C Level<sup>1</sup></b>	
Less than 7.2	16 (34%)
7.3 to 8.5	
Greater than 8.5	25 (53%)
Missing	6 (13%)
<b>Medications<sup>2</sup></b>	
Dulaglutide	3 (6.4%)
Empagliflozin	1 (2.1%)
Glipizide	2 (4.3%)
Glucagon	1 (2.1%)
Hydralazine	1 (2.1%)
Insulin	27 (57%)
Liraglutide	3 (6.4%)
Metformin	20 (42%)
Pioglitazone	1 (2.1%)
None	9 (19%)

1. In question 5 of the demographic survey distributed to participants, patients were asked to circle a specific hemoglobin A1C. In the statistical analysis, it was decided to group ranges together for ease of statistical analysis. These three groups are less than 7.2, 7.3 to 8.5, and greater than 8.5.
2. Note: patients can be on multiple medications

## Results

The results were organized into five sections: Blood Sugar, Eating Habits, Medication, Healthcare, and Managing Diabetes. Each section is addressed below

### Blood Sugar

Majority (87%; 40/ 46, 1 missing) indicated that a healthcare provider has talked to the survey respondent on how to manage their diabetes. Approximately half of the respondents have checked their blood sugar every day in the past seven days (51%; 23/45, 2 missing). Among 21 respondents who did not check their blood sugar every day and provided a reason, 9 (43%) indicated they did not have a way to measure their blood sugar. Six (29%) of the 21 respondents indicated they did not remember to measure their blood sugar. Four (19%) of the respondents indicated another reason. One person stated they did not know how to check their blood sugar and two people indicated they did not want to check their blood sugar.

### Eating Habits

Majority (73%; 33/45, 2 missing) stated they “agreed” or “strongly agreed” to the statement that diabetes changed the way that they eat. When asked to elaborate on why they chose that answer choice in a free response, people expressed experiencing weight loss, eliminating certain foods from their diet, or adding more vegetables. In addition, there was expressed limited options given their living situation or eating the food provided in the cafeteria. While majority of the respondents (77%; 35/45; 2 missing) expressed that someone has talked to them about foods to eat to manage their diabetes, there were 10 (22%) respondents that selected no. Among the 35 respondents who stated someone talked to them about food to eat, approximately half (54%) felt they had access to those types of foods. Among the 10 respondents who did not have someone discuss what foods to eat, 8 (80%) said they did not have access to those types of foods.

There were 44 respondents who answered the question where they get at least 25% of their food per month. Respondents were allowed to select multiple answers. The most selected response was buying foods from grocery store (59%; 26/44) followed by eating meals provided by the shelter (39%; 17/ 44) (**Table 2**).

**Table 2. Responses from 44 patients experiencing homelessness and diagnosed with diabetes on how they get at least 25% of their food per month**

Response	N (%)
Buying food from a grocery store (ex: Walmart, Target, etc.)	26 (59%)
Meals Provided at a Shelter	17 (39%)
Food pantry	9 (20%)
Fast food establishment	7 (16%)
Meal Distribution service	7 (16%)
Groceries from a convenience store	2 (4.6%)

Note: participants could select multiple responses

### Medications

Majority of the respondents (79%; 37/ 47) indicated they are prescribed medications for diabetes. Out of the 37 patients prescribed medication, 29 (78%) described the barriers they faced. Approximately a third (10/29; 34%) of the respondents expressed not having any barriers to medications and take their medication regularly (**Table 3**). The most common barrier was unable to pick up medicine due to a transportation issue (31%) followed by forgetting to take the medication (28%). Note, out of the six who stated they could not have access to refrigeration for the medication, they all mentioned living in emergency shelter or the street when describing their current living situation.

**Table 3. Responses from 29 patients experiencing homelessness and diagnosed with diabetes on barriers to taking their medications**

Response	N (%)
No barriers—take medicine regularly	10 (34%)
Transportation issues to pick up the medication	9 (31%)
Forget to take the medication	8 (28%)
No safe place to store the medication	7 (24%)
Cannot afford the medication	6 (21%)
Access to refrigeration	6 (21%)
You do not know how to get the medication	3 (10%)
Other	3 (10%)
You do not know how to use the medication	1 (3.5%)

### Healthcare

There were 39 respondents to the question asking what prevents them from seeking care for their diabetes. Majority of respondents (56%) indicated no barriers and that they were able to attend regular scheduled healthcare appointments (**Table 4**). The most common barrier was not having consistent transportation to the clinic (31%), followed by unable to afford the cost of the visit (13%).

**Table 4. Responses from 39 patients experiencing homelessness and diagnosed with diabetes on barriers to making health appointments**

Response	N (%)
N/A: Currently attend regular scheduled healthcare appointments	22 (56%)
No consistent transportation to the clinic	12 (31%)
Unable to afford the cost of the visit	5 (13%)
Appointments are not available when you need	2 (5%)
You feel unwelcome in the healthcare setting	2 (5%)
Healthcare providers are unable to meet your needs	1 (2.6%)

### Managing Diabetes

Forty-two (42) respondents rated on a scale of 1-10 how confident they were in their ability to manage their diabetes. Thirty-one percent (31%) rated themselves a 10, while 43% rated themselves a 5 or less. Out of the 13 respondents who rated themselves a 10, 8 (62%) had a A1C of less than 7.2 (62%), while 5 (38%) had a A1C of greater than 8.5.

### Discussion and Innovation

Respondents varied in their confidence in managing their diabetes and success of managing their diabetes. There were multiple barriers expressed in the management of diabetes while experiencing homelessness. Overall, there are limitations to the data from our survey, given that the number of participants was lower than we would have liked, but it does help give actionable items for the True Worth clinic to begin focusing on. Discussion on each specific aspect of the survey is addressed below by category

*Blood Sugar:* 87% of participants stated that a healthcare worker had talked to them about measuring their blood sugar, but only half of the total respondents stated that they had checked their blood sugar in the past 7 days. Among the 21 respondents who did not check their blood sugar every day and provided a reason, 43% indicated they did not have a way to measure their blood sugar, 29% indicated they did not remember to measure their blood sugar,

and 19% of the respondents indicated another reason. One person stated they did not know how to check their blood sugar and two people indicated they did not want to check their blood sugar. This data indicates that majority of patients are educated on diabetes management and understand the importance of checking blood sugar as prescribed to them, but that the barrier is the ability for those patients to check their blood sugar. 43% of patients indicated that they did not have a way to measure their blood sugar, meaning that they understand that they should, but that they do not have the resources available to them to do so. This identifies a specific barrier; access to blood glucose monitoring equipment. The second largest group of participants that did not measure their blood sugar stated that they did not remember to measure their blood sugar. This barrier is a more difficult one to tackle, but indicates that for these patients the access to specific equipment or education about diabetes is not the primary barrier.

*Eating Habits:* A majority of patients stated that diabetes changed the way that they eat and expressed that someone has talked to them about foods to eat to manage their diabetes. Once again, this points to education not being the primary reason for patients having difficulty controlling their diabetes. About half the patients who stated that they had received education about food choices stated that they had access to those type of food. This result is interesting because it indicates that patients have received education and felt that they had access on types of food, which points to the barrier perhaps being something that was not addressed in the survey, such as having a place to prepare that food, or having consistent access to that food, rather than intermittent access.

Secondly, there were 44 respondents who answered the question where they get at least 25% of their food per month. Respondents were allowed to select multiple answers. Almost 60% of respondents stated that they got at least 25% of their food per month at a grocery store. The second most common answer to this question was eating meals provided by the shelter. Having patients receive meals from a shelter indicates that often, the choice of types of food to eat is outside of a patient's control.

*Medication:* Majority of the respondents indicated they are prescribed medications for diabetes. Out of the 37 patients prescribed medication, approximately a third of the respondents expressed not having any barriers to medications and take their medication regularly. However, among patients who stated that they did have barriers to taking their medication regularly, the most common barriers mentioned was being unable to pick up medicine due to a transportation issue, followed by forgetting to take the medication. Out of the six patients who stated that one of their barriers was that they did not have access to refrigeration for medication, all mentioned living in emergency shelter or the street when describing their current living situation. The types of medications that patients were prescribed

varied, but a majority of patients with medication were prescribed insulin, with the second most common medication being metformin.

*Healthcare:* Majority of respondents to the question asking what prevents them from seeking care for their diabetes indicated no barriers and that they were able to attend regular scheduled healthcare appointments. However, roughly a third of patients indicated that not having consistent transportation to the clinic was barrier to care. This indicates that for most people, the location and cost of the True Worth clinic is not a barrier that causes them to have difficulty managing their diabetes. However, for people who did have difficulty accessing care, about a third of them indicated that transportation to and from the clinic was the primary barrier. The question of transportation was not broken down into any further categories, so it is difficult to elucidate whether patients have trouble paying for the cost of a taxi/rideshare, or if patients struggle to find public transportation that will take them to the location of the clinic. Given that Fort Worth is a sprawling metroplex and that transportation was also mentioned as the biggest barrier to patients being able to take their medication, further research into this particular barrier could be helpful.

*Managing Diabetes:* In the last question of the survey, respondents rated on a scale of 1-10 how confident they were in their ability to manage their diabetes. 31% rated themselves a 10, while 43% rated themselves a 5 or less. Out of the respondents who rated themselves a 10, 62% had a A1C of less than 7.2 while 38% had a A1C of greater than 8.5. This means that a majority of patients who rate themselves as confident in their ability to manage their diabetes had a corresponding A1C that indicated that their diabetes was well controlled. However, almost a third of patients who stated that they felt confident in their ability to manage their diabetes had a A1C greater than 8.5, which indicates that on average, their blood glucose is above the threshold of normal. Together, these two data points indicate that further study is needed to understand the difference between these two patient groups.

## **Future Directions**

The data collected in this project is a strong starting off point for future work that aims to help this patient population have improved outcomes in chronic conditions. During the time of the survey collecting, the team had a difficult time reaching the goal number of survey participants. A future direction for this project will be to simply have an increased number of participants taking the survey. This can be done through a variety of methods, such as increasing the time of data collection. Additionally, much of the data collection time took place at the start of the Covid-19 pandemic. It is a possibility that the patient census at the clinic was significantly reduced as a result of the pandemic. The data collected points to a variety of barriers that affect patients' ability to manage their diabetes, but the issue of transportation appeared more

than once as barrier that a significant number of patients faced. A further study assessing specifically what those transportation issues are and attempting to implement. Additionally, a study that looked specifically at the barriers surrounding medications prescribed to patients could be useful. This study showed that most patients, if prescribed a medication, are prescribed insulin. The question in the survey regarding barriers to medication adherence did not touch on difficulties that patients may have with insulin specifically, such as access to clean equipment for insulin injection.

## **Conclusions**

Based on the survey results, education specific for diabetes is not the primary barrier that patients face. Patients indicated that they struggled most with transportation to and from the pharmacy, storage for medication, and access to foods that help control blood sugar. Additionally, this survey covered a large number of different variables that could be affecting patients ability to manage their diabetes. Further studies should focus in on one specific question, rather than attempting to address multiple questions in one survey. The data from a more narrow survey may elucidate answers that were too specific to come out in this survey.

## **Compliance**

We conducted a cross-sectional survey of adult patients experiencing homelessness and diagnosed with diabetes at the JPS True Worth Clinic. The North Texas IRB institutional review boards considered this project exempt, as it was a survey of adult patients. Surveys were done on paper and did not contain any identifying patient information. After being collected, the surveys were kept in a locked office.

Each completed survey was assigned a number at random, and the dataset from that specific survey was linked to the randomly assigned number. This allowed all the data from one survey to be identified as a set while not requiring any identifiable patient information. All patients who were asked to take the survey were offered a pair of socks.

## References

1. Henry M, Mahathay A, Morrill T, Robinson A, Shivji A, Watt R. The 2018 Annual Homeless Assessment Report (AHAR) to Congress. Part 1: Point-in-time estimates of homelessness. Published online December 2018.
2. Bernstein RS, Meurer LN, Plumb EJ, Jackson JL. Diabetes and Hypertension Prevalence in Homeless Adults in the United States: A Systematic Review and Meta-Analysis. *Am J Public Health*. 2015;105(2):e46-e60. doi:10.2105/AJPH.2014.302330
3. National Diabetes Statistics Report 2020.  
<https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf>
4. Bonin E, Brehove T, Carlson C. Adapting Your Practice: General Recommendations for the Care of Homeless Patients. Published online 2010.
5. Harris MI. Impaired glucose tolerance in the U.S. population. *Diabetes Care*. 1989;12(7):464-474. doi:10.2337/diacare.12.7.464
6. Brownlee M. Nonenzymatic Glycosylation and the Pathogenesis of Diabetic Complications. *Ann Intern Med*. 1984;101(4):527. doi:10.7326/0003-4819-101-4-527
7. Mitchell MS, León CLK, Byrne TH, Lin WC, Bharel M. Cost of health care utilization among homeless frequent emergency department users. *Psychol Serv*. 2017;14(2):193-202. doi:10.1037/ser0000113
8. To MJ, Brothers TD, Van Zoost C. Foot Conditions among Homeless Persons: A Systematic Review. Zeeb H, ed. *PLOS ONE*. 2016;11(12):e0167463. doi:10.1371/journal.pone.0167463
9. LaCalle E, Rabin E. Frequent Users of Emergency Departments: The Myths, the Data, and the Policy Implications. *Ann Emerg Med*. 2010;56(1):42-48. doi:10.1016/j.annemergmed.2010.01.032
10. JPS. Healthcare needs and health resource utilization of people experiencing homelessness: A qualitative study. Unpublished Meeting Summary presented at: April 28, 2020.